

Rural Credit Reforms in LDCs: Issues and Evidence*

Avishay Braverman
and
J. Luis Guasch**

An analysis of the environment and problems faced by financial institutions operating in rural markets along with an evaluation of the government intervention in those markets is presented here. Given the overwhelming failure of the institutions created during the past two decades, a methodology for reform to improve their performance is developed. It emphasizes the need for a coherent organizational form, a proper set of incentives, accounting rules and strong enforcement. The reforms suggested are directed to both sides. The supply side or government-induced lending institution and the demand side, agent's organizations like credit groups and cooperatives. Different sets of reform are suggested for each side. Along with the theoretical development, we analyze the evidence of some innovative reforms already implemented in LDCs.

I. Introduction

In most LDCs, there is clear evidence of "urban bias"; that is, government policies (price/tax, investment) favor residents of the urban sector over rural inhabitants.¹ This bias seems to exist in the allocation of credit

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** The authors are Division Chief, Agricultural Policies, The World Bank, and Associate Professor, University of California at San Diego, respectively.

¹ See Lipton (1977).

which often lie at the feet of the institutions which were created to channel credit and (ii) to review the recent developments in the theory of incentives and organizations in order to shed some light on the process of institutional reform.

The structure of this paper is as follows. In Section II we evaluate government intervention in rural credit markets in particular the targeting of small farmers, the tolerated default and the impact of subsidized credit. In Section III we address the evidence of the development of formal financial institutions, including the success stories. In Section IV we address the informational problems in rural credit markets, and the role of informal credit markets and interlinked land, labor and credit contracts in light of evidence and recent theory. In Section V we present a review and evaluation of the current developments in the theory of incentives and organizations and how they have been incorporated into the analysis of institutional reform to find more effective ways to channel credit to rural markets.

II. Credit Subsidies, Persistent Default and the Plight of the Small Farmer

A. Government Intervention in Rural Credit Markets: Overall Evaluation

Until recently, conventional wisdom held that imposing low ceilings on interest rates and allocating massive amounts of credit to rural financial markets would yield rural development and improve income distribution. The arguments traditionally set forth for government intervention in providing subsidized interest rates have been numerous. The most prevalent are the following. It has been argued that without subsidized interest rates adoption of technical innovation would be delayed and there would be under-usage of costly inputs like fertilizer. Such effects slow the growth of output and the development of the agricultural sector. It has been claimed that since rural credit markets are notoriously imperfect, access to credit by farmers, particularly small ones, is severely limited, and that without government intervention a high price of capital would prevail. This would further screen out the small farmers from credit markets, fostering poverty and worsening income distribution. Lastly, it has been argued that because of distorted exchange rates, food price controls, imports of cheap food and inefficient markets, farmers receive low prices for their products, hampering their borrowing ability. The government might, based on a "second best" type of argument, further intervene and attempt to compensate farmers for the adverse effects of those policies by

If credit program interest rates are not market rates — which is the case for most programs implemented in rural financial markets (RFM) — they do not reflect the true cost of capital. This results in a subsidy or income transfer to loan recipients. The larger the size of the loan, the larger will be the subsidy or income transfer. Thus, larger landholders receive larger income transfers and income inequality increases. The problem is exacerbated because of excess demand as rationing is not implemented equiproportional to demands. Because commercial banks and specialized farm credit organizations tend not to be located in rural settings, they possess limited information about rural customers. Their credit allocation policies tend to be based on observable wealth or ability to provide collateral. Therefore, they are not likely to ration the large landholders. Moreover, the medium-size landholders are more likely to be rationed while the small farmers are screened out. Substantial costs in processing and administering loans, with returns increasing as a function of loan size, strengthen the incentives to maintain such policies.⁵

We have suggested that interest rate restrictions induce banks and other financial institutions to ration credit in a way that excludes small farmers from formal credit markets and thus generates undesirable inequities and worsens income distribution. However, we should note that a laissez faire credit policy, no restrictions imposed, will not in itself be a solution to the problem. Targeting the small farmers is a problem whether or not interest rates are subsidized. The reasons are the substantial costs in processing and administering loans, with returns increasing as a function of loan size. As well, it is often presumed that larger and wealthier farmers are better credit risks, either because of their ability to provide collateral, because of their better track records or because banks have better information on them. Subsidized credit worsens the problem. In increases the demand for loans at all levels and for all types and, given fixed supply of capital, the rationing to small farmers will be even more severe.

The consensus and natural inference from most of the studies in this area is that for public credit to reach the small farmers, a different set of policies is required. Specific incentives need to be provided for institutions to channel funds to targeted groups along with the design of sensible monitoring procedures for information gathering. Without the com-

⁵ To all these efficiency arguments in procuring loans we have to add patronage relationships between wealthy farmers and bankers that will further curtail the supply of credit to small farmers. Therefore, given the evidence, we are led to agree with many others that subsidized interest rate programs have had a regressive effect on income distribution. For example, Dale Adams, Claudio Gonzalez Vega and John Von Pischke, argue strongly for this view.

Many countries (i.e., Mexico, Costa Rica, Philippines, Sri Lanka, India) provide some of that form of insurance. The objective is to induce lenders to provide more loans to a target group by shifting part of the recovery risk to other agencies. Such policies have the effect of weakening the incentives of financial institutions to collect and that clearly impacts very strongly on recovery rates.

The conclusions of many of those studies indicate that a much harder line ought to be taken on default particularly when the reasons are arbitrary, for the long term viability and effectiveness of credit policies. Enforcement, accountability and incentive design regarding loan size, terms, renewals and new loans must be implemented; otherwise one could foresee a bleak future and unnecessary delays in the progress of rural development and improvement in the distribution of income.

D. Inflation, Monopoly Policies and Patronage

Subsidized loans are predictable generators of poor investments, misallocations, and borrowing for arbitrage. They clearly become more attractive and distortive in the presence of high inflation rates (e.g., Latin America) since most of the loans are set in nominal terms. Moreover, they provide significant leverage to the individuals in charge of their disbursement. Under these conditions it is not surprising that credit is allocated as well in return for political benefit or as a compensation for favors rather than according to need or efficiency. Examples of this phenomenon abound (see Landman and Tinnermeier (1981) in Bolivia and Robert (1979) in India for a sampling). This condition is reinforced by specialized farm credit institutions that operate without active competition and/or accountability. Monopoly power from non-profit institutions along with subsidized credit fosters patronage, corruption and other forms of inefficiency and inequality wherever markets lack the force of competition.⁷

III. Institutional Developments and Operating Constraints

Significant institutional developments have taken place in rural credit markets during the last two decades. A plethora of distinct types of organizations has emerged, including cooperatives, government owned agricultural banks, rural private banks, multipurpose development agencies with credit responsibilities, etc. The rationale for such an undertaking has been the belief that the agricultural sector is not well served in credit

⁷ For further evidence on rural credit programs, see Adams and Vogel (1986).

relating to the special characteristics of agricultural lending.

Success Stories

It is encouraging to note that there have been a number of success stories in the process of disbursing credit to rural credit markets. Identifying and explaining successes are valuable in the process of reform, in part because those cases had many of the attributes we associate with failure. Worth mentioning is the INVIERNO Development Bank program, implemented in Nicaragua in 1975; it served the region containing the largest number of small farmers and the lowest rural family income. Its results were extraordinary: participation rate of small farms was more than 80 percent; the maize yield per hectare doubled that of traditional methods; the rate of adoption of modern technology was significantly high; and the delinquency rate was only about 10 percent. Internal auditing of local office operations, cost monitoring, technical help for operational procedures and new methods were combined in a policy that supported these successes. Expeditious loan application and credit disbursement was also a major factor in the program's success, together with long-term credit policy suggested by efficiency arguments. Lines of credit were devised for a five-year period with flexible schedules with loan repayment built into the contracts.

A different success story emphasizing savings and positive real rates of interest located in the Republic of Korea (Lee, Kim and Adams (1977)) is fairly representative of most East Asian countries. In the 1960's, Korea implemented an extensive network of rural cooperatives. They were organized on three levels: primary cooperatives at the township level; county cooperatives; and the National Agriculture Cooperative Federation at the national level. Participation rates reached nearly 80 percent. The cooperatives provided farm inputs, farm product marketing, credit and savings deposit services, mutual insurance, and technical education. The emphasis on mobilizing rural financial savings was perhaps the most distinguishing feature. While deposits contributed only 20 percent of loanable funds in 1961, and government funds nearly 60 percent, by 1975 the figures reversed to 51 percent and 19 percent, respectively. A strong government policy of positive real interest throughout most of the period was crucial. Equally important may have been the bottom-up design of the cooperative system which was quite effective in providing secure and dependable savings opportunities for small farmers.

Also noteworthy is Kenya's Cooperative Saving Scheme, initiated in 1970, that is based on a system of weak forced savings (Von Pischke (1983)). Cooperative members are mostly small coffee farmers. The scheme

joint liability programs in Zimbabwe. Under the former loans are made and accounted for on an individual basis, but the farmer has to show membership in an active cooperative or farming group. Emphasis is placed on mutual aid and collective responsibility. In the event of a member default, the loan conditions do not require that the other members cover the loan. Rather it stipulates that the whole group loses eligibility for future loans. Under the alternate mandatory joint liability program, responsibility for loan administration and repayment rests with the group as a whole. The group requests loans and is responsible for dividing it up among the members and for selling and marketing the group output. Therefore, there is full joint liability, automatically enforced via the control of the product. Loan recoveries have ranged on the 70% range for the voluntary joint liability program and in the 80 to 92% range for the mandatory liability program. These loan recovery rates compare very favourably to those for farmers in the same region, based on individual liability; the recovery rates there were in the 50% range.⁹

Another recent success story has been the FUNDE credit program in Nicaragua. It reached very high participation rates and the default rates very significantly low. The strength of the program was the commitment by the government lending agency to conduct on the field periodic training and educational sessions for the farmers and to have and implement extensive monitoring and accounting procedures on the use of the funds and to hold the loan recipients accountable. Moreover no new loans were to be given until old loans were repaid.¹⁰

In summary, the critical common features in many of those programs were (i) that no new loans were to be given until old loans were repaid, indicating that intertemporal linking of loans is an effective way to induce compliance, (ii) strict auditing and accounting procedures, suggesting the value of monitoring technologies in inducing the desired behavior, and (iii) some form of joint responsibility or liability by small groups of farmers, whereby default of one of the members would imply the cancellation of any future loans to the whole group.

IV. Informational Problems

A. Credit Rationing

In addition to the problems indigenous to rural credit markets describ-

⁹ See Bratton (1986) for a detail analysis of the Zimbabwe case study.

¹⁰ For a comprehensive evaluation of the FUNDE program see Tendler, *et al.* (1985).

for consumption purposes or other nonproductive uses.¹² Likewise, finiteness of borrower's wealth and insufficient credit instruments to induce the right actions are generic elements of rural credit markets. In particular, in many LDCs property right are not well defined (e.g., see Feder (1987) and Binswanger and McIntire (1986)), and therefore collateral is not available on an extensive basis. In some areas, land, usually the primary asset of many farmers, is not allowed as a collateral.

Thus, in itself, a policy of freeing interest rates on loans will neither eliminate the rationing of the small farmers in the credit market nor necessarily improve their rate of loan allocations as a direct effect. However, indirectly the small farmers can benefit since at the higher interest rate there might be a reduction in the demand for loans of the larger farmers, and thus the residual amount of funds available to small farmers might be larger (see Bell and Srinivasan (1986) and Braverman and Guasch (1986b)). If nothing else, market rates will decrease the incentives for patronage and arbitrary decisions, thereby improving the regressive nature of the current subsidized credit program.

Lifting interest restrictions will induce, on efficiency grounds, an equilibrium interest rate differential sensitive to the size of the land holding if it is perceived to be correlated with risk of default and also sensitive to the size of the loan application, given the increasing returns to scale of processing loans. Since equity is one of the criteria we are concerned with, government intervention to absorb the higher transaction costs of small loans application might be warranted, but only when the "government failures," mentioned above, can be eliminated.

B. Informal Lending and Interlinking of Credit Contracts with Labor and Land Contracts

Informal lending was once the only form credit took in rural settings. Evidence suggests that as farm size increases, private credit sources, village moneylenders and pawnbrokers, chit funds with an array of implicit interest rates and friends or relatives become less important than banks. With the implementation of development plans, official lending complements but clearly does not supersede informal sources.

Sample surveys supplying the information on the extent of informal lending practices indicate that their volume is far greater than that of organized institutions. Informal lending is characterized by a much

¹² Although that use of loan in itself does not imply necessarily inefficiency or undesirability.

consider under acceptable institutional structures.¹³ The "first best" alternative is clearly to remove the urban bias directly.

V. An Institutional Approval: Theory and New Developments

A. Overview

From our analysis of the credit policies undertaken in rural markets in LDCs during the last three decades, we can infer that by and large the roots of the problems, seem to be the following. First, the objectives of those policies are not altogether clear or made explicit. Second, even when they are, there seems to be conflicting goals stated or an underlying inconsistency. Third, the mechanism or technology to implement these objectives is not well specified. Furthermore, even when there a well-defined mechanism, the incentive system for the individuals or institutions responsible for their undertaking is not fully compatible with the proposed objectives. Therefore, the reported high failure rate of past credit policies should not be surprising. Perhaps the common perception was that subsidized credit would be the magic wand which when waved would make everything turn out all right. But as we have seen, subsidized credit has made matters even worse.

The problems of objective definition ought to be easy to correct, but clearly conflicting goals cannot be expected to be obtained simultaneously with a limited set of policy instruments. The main challenge, however, ought to come in the design of the implementation technology, namely, the institutional structure and the incentive schemes more appropriate to induce the desired objectives along with a strong enforcement policy. Unfortunately, little conceptual work to date has been devoted to this task in the economic profession. Following the decline in attention to the "institutional school," modern economic literature has largely overlooked the analysis of institutions, institutional change and reform mechanisms in general, treating them as exogenous elements seldom analyzed with any rigor.¹⁴

More recently with new developments in the theory of incentives and

¹³ See Braverman and Kanbur (1986) for an analysis of agricultural price reform in the face of sustained urban bias.

¹⁴ Noted exceptions are Arrow's (1974) eloquent exposition of the benefits and limits of organizations, followers of the Simon school and Williamson (1975). Institutional aspects are also strongly emphasized in the works of North and Thomas (1973), Ruttan (1982) and Schultz (1968). This latter work is explicated in Schuh's (1981) presidential address to the AAEA.

structure of the previous contract and by the information available to all parties. The system can be viewed as a three or more tiered structure or as a sequence of nested principal/agent relationship. As well, the financial institution itself is a collection of overlapping principal(s)/agent(s) relations. Each layer in the hierarchy of an organization can be thought of as the agent for the level just above it and the principal for the layer below it.

The theory has been concerned with the organizational structure and the design of incentive mechanisms most conducive to a reduction in inefficiencies in the undertaking of the objectives. Incentive design is implemented on at least two levels. First, it is directed at the institution itself (i.e., managers, supervisors and loan officers) to induce them to behave appropriately. Specifically to contribute the desired or optimal amount of effort, reduce leakages from the system, eliminate or minimize patronage, screen loan applications according to bonafide economic principles and to comply with stated loan portfolio targets. Secondly, incentive design is directed at the loan recipients, the farmers, to induce them, when appropriate, to select the desired use for the loan and to comply with the repayments schedule.

Nested relationships have appeared mostly in the context of the theory of the firm and its internal organization (Calvo and Wellisz (1978), Stiglitz (1975), Rosen (1982), Milgrom and Geneakopoulos (1984), and Guasch (1985), among others). These agents in the multi-layered structure of the firms, however, were severely limited in the range of strategies they could implement. Their behavior was rather passive. This literature has shown how slack can trickle down a hierarchy. If incentives are inappropriate for the principal or head to monitor, a low supervisory effort will result in the middle tier, which leads to a low productivity effort in the bottom tier. This work also draws conclusions on the optimal span of control and size of the vertical structure as well as on wage differentials and its implications for income distribution.

Principal/agent models offer a theoretical paradigm within which managerial incentive problems can be studied. The agent's activities are usually represented by a stochastic technology that he operates. The agent's compensation scheme is designed by the principal to maximize his objectives subject to the constraint that the agent's opportunity costs are covered. For example, suppose the technology is of the form $x = x(a, z)$, where x is output, a is the agent's effort and z is a stochastic variable not observable to any party. Then an incentive scheme is a sharing rule $s(x)$. The principal's design problem is one of inducing the agent to take a particular action, a , and finding the sharing rule that will make the agent to

yielding a general gain in efficiency. Many firms, at least in the developed world, use these schemes internally to induce the desired actions or amount of effort. Also, it is quite common for the remuneration of top managers to be linked with their performance in relation to that of the average of the top third firms in the industry. These commonly observed schemes have been studied by Lazear and Rosen (1981), Holstrom (1982, 1983), Nalebuff and Stiglitz (1983), Green and Stokey (1982), Bhattacharya and Guasch (1988) and Guasch (1985). These schemes can often approximate the first best allocation, especially when the number of agents is large. The advantage of contests over other schemes is greatest when the risk associated with the common environmental variable is large because contests control for that kind of risk automatically. Overall, contests can be quite desirable and useful for information gathering. Moreover, rural credit markets seem to possess many of the characteristics that make contests effective. All lending institutions are faced with similar options and problems, all loan officers tend to face a similar pool of farmers and loan applications and all farmers in a given area are subject to the same environmental risks.

Furthermore, under these incentive schemes significant deviations from optimal actions are easily inferable, unless there is full collusion, an unlikely and quite unsustainable event. Those studies suggest that reorganizing institutions into several parallel divisions, forcing them to compete with each other, and basing rewards on relative performance in the disbursement of funds or loan portfolio, can alleviate some of the problems associated with past credit policies, exposed above. In addition, a rotation policy of key employers would shorten the benefits those individuals might derive from undesirable policies since the benefits of misallocation, patronage and collusive behavior would be short lived. While some efficiency derived from scale effects or learning, may be lost, the incentives for misallocation and patronage can be significantly reduced. Likewise, similar schemes can be used to allocate credit among farmers and include its desired use with the terms and renewals of new loan options based on their relative performance in loan repayment or production levels.

A complementary approach developed by Sah and Stiglitz (1986), considers the architectural design of organizations and the quality of decision making. Presuming honesty but human error, they characterize the optimal architecture in terms of minimizing a function of Type I and II errors. Their framework can easily be adapted to include strategic behavior and multiple layers. Such a loan or project processing framework can be helpful in controlling for arbitrary decisions, quite pervasive in credit lending activities, since the design of the organizational structure can af-

While stating the objectives to be accomplished by incentive design is quite clear, their implementation is less so. Part of the incentive design problem is to decide which set of instruments (variables) the principal ought to use. Clearly, the more instruments the principal uses the more effective will be the incentive scheme he can design for the agents. However, each instrument requires monitoring some aspect of the agent's behavior and that is costly. Therefore one should consider the set of feasible options and choose the most efficient among them. For example, the choice of input versus output incentive scheme or a mixture of the two is not an obvious one when the monitoring costs are taken into account. Thus the question of which subset of instrument and which monitoring technology one ought to use is of utmost importance in incentive design. The answer to that question clearly depends in part on the nature of information flows, accounting procedures and the organizational structure of the institutions. Since these elements can be affected by institutional reform, one ought to consider them explicitly in any such analysis.

Lastly, in this subsection we address the effects of repeated interactions. Since the relationship between any two adjacent links of the chain of disbursement is often repeated a dynamic framework in the design of incentive contracts might be appropriate. As such consideration of the distinction between the incentive effects of short-term and long-term relationships is warranted. Feasible long-term relationships are advantageous in incentive design to the extent that they can escape the inefficiencies usually associated with the short-term equilibria or one short deals. The literature in repeated moral hazard (Radner (1984)) or trigger-point strategies (Porter (1983)) is quite useful in this context. Several rules for assessing the relative and absolute performance of different layers in the structure could be compared and evaluated in regard to the environmental constraints. Along these lines, in a long-term relationship (the length of which is derived endogenously), an incentive scheme can be designed to approximate an efficient allocation. This assertion does not imply that short-term credit ought to be eliminated. In fact, a fair percentage of small borrowers seem to prefer such credit with low transaction costs (i.e., credit for working capital rather than for investment) and it can be efficient. It does not rule out either the use of discretionary power of the lending institution to use short-term credit as a screening or information gathering device. In such a situation, the principal offers a first term incentive scheme and observes some measure of the agent's first term performance which depends on the agent's ability and contributed effort. In the second term the principal updates the incentive scheme and so on. In effect, a long-term relationship could be governed by a sequence of short-term contracts. The argument, based on efficiency grounds, is that long-

successes. Perhaps that should not be terribly surprising for if the incentive schemes and design are not set "right," groups are prone to encourage the wrong kind of economic behavior. Joint liability and the fact that some of the actions taken by group members are not observable by the group, and thus cannot be contracted for, give rise to moral hazard problems fostering free riding behavior and thus significant inefficiencies. These problems are enhanced in the presence of economy-wide external shocks.¹⁵ Recent results in the theory of incentives and teams addressing these concerns have developed allocation and incentive mechanisms that when implemented reduce or eliminate those inefficiencies (see Holmstrom (1982), and Braverman and Guasch (1988)). These schemes usually require the setting of specific sharing rules and penalties or fines for the members if output falls below a certain specified level and can be sensitive to the size of the group. Unless these schemes are implemented, failure of the credit group or the cooperatives as a viable institution will be the likely outcome.

The high failure rate of cooperatives and credit groups is disconcerting, not only because large amounts of resources have been involved, but also because of their insignificance in the process of economic development in rural areas and in improving the plight of the small-scale farmers. A better understanding of these institutions and of the factors most conducive to success in each particular context is warranted. From the empirical and theoretical studies that have addressed that issue (see Braverman and Guasch (1988) for a more elaborate description and references), the following picture emerges. If cooperatives and credit groups are perceived as purely nominal organizations, and if there is a lack of sense of belonging and of joint responsibility then that will hamper the actions and faith of the members. If they lack efficient administration and are short in incentives schemes, members are bound to fail in compliance. If

¹⁵ As the Israeli experience (see Kislev, Lerman and Zusman (1988)) demonstrates, the viability of the credit cooperative system to withstand external shocks may require limited joint liability. During the recent period of high inflation in Israel, many members of the various cooperatives borrowed extensively, behaving as "free riders" and expecting somehow that the umbrella organization would bail them out, if conditions changed for the worst. In addition to regularly extending subsidized credit, the government stood ready to bail-out farmers and their cooperative organizations whenever they experienced financial strains. Assistance usually took the form of loan rescheduling, government guarantees, etc. Since the government consistently aided farmers in financial distress, lenders formed the expectations that such aid would always be forthcoming. The moral hazard phenomena associated with joint liability and the control problems characterizing the cooperative system led then to abusive over investment. As a result the system collapsed following the control of inflation and the prevailing high interest rates. Thus unlimited joint liability without appropriate monitoring and enforcement has been proven ineffective.

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