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**9. ABSTRACT**

This paper describes a pilot project conducted for 15 months in 1966-1967 in Ibiruba county, in the state of Rio Grande do Sul, Brazil. The purpose of the project was to test whether the provision of extensive bank credit to small farmers would significantly increase their productivity. Bank loans increased by 500 percent during the period, at the standard legal interest rate of 13 percent. However, because the loans were delayed, most of the money was not used for inputs that would have raised productivity, and no difference was found between the loan and non-loan farms. In general, the banks were too restrictive and inflexible in their terms to attract loan applications from most of the small farmers, and one of the purposes of the project--to institutionalize credit for small farmers--was not realized. It was concluded that the banks participated in the Project mainly because of public pressure at the outset, but that their profits were insufficient to induce them to continue the program after the project ended. A general conclusion from the project is that credit programs for small farmers must be integrated with technical assistance, improved technology, and coordinated involvement of banks and local government agencies.

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CREDIT INFUSION AS A SMALL FARMER DEVELOPMENT STRATEGY --  
THE IBIRUBÁ PILOT PROJECT IN SOUTHERN BRAZIL

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Small farmer development programs have often followed a strategy of simply acting as a "broker" between credit institutions and borrowers. This approach stems from an assumption that institutions and farmers would both "profit" from getting together. The bare bones of the strategy is simply the demonstration of this mutually beneficial relationship. The present study reports on a pilot project that followed this strategy in bringing together private banking institutions and small farmers in Southern Brazil.

Credit and Small Farmers

In the mid-1960's, there was a relative lag in development among small farmers in Southern Brazil. At the same time, larger farm units in the same region were making significant advances in the use of technology and were absorbing most of the new credit made available to agriculture under special Federal programs. [Rask, 1971] Banks were lending relatively little to small farmers. This lack of bank credit was generally cited as a major limiting factor in the development of

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small farm agriculture. Several possible explanations for the lack of bank credit for small farmers have been suggested:

(1) Small farmers could not profitably use more credit. They could be nearly or fully exploiting the available technology. There could be technology available but unused by small farmers for lack of a complementary extension input. The input and product price relationships could make a higher level of technology unprofitable.

(2) Farmers might not be using all the bank credit available to them. They could fear lowering their equity levels because of the associated additional risk or for moral reasons. They might also have a fear of bankers brought about by language caused communication problems, previous negative experiences or hearsay. Terms of the credit could be inappropriate and unacceptable to small farmers. Included would be bank policies concerning loan purpose, loan amount, interest rate, service charges, repayment period, timing of repayments and security requirements. [ Erven, 1969 ]

(3) Small farmers could be considered poor credit risks by the banks. This could result from failure to repay, using credit for consumption rather than production or investment purposes and/or using credit for production inputs and investments that would have been made with equity capital were credit not available. [ Rao, 1970 ]

(4) It could be unprofitable or relatively less profitable to loan to small farmers. This could result in there being insufficient bank credit to meet the needs of small farmers. [ Adams, 1971 ] Lower interest rates, higher administrative costs, and higher risk relative to the banks' lending alternatives could explain this unprofitability. Misconceptions and lack of understanding of small farmers by bankers could contribute to unprofitable lending to small farmers. It could simply be

more profitable to limit the number of borrowers by selecting a relative few large farms for a bank's agricultural borrowers. [ Adams et.al., 1971 ]

To test some of these alternative explanations for the lack of credit for small farmers, improve agency cooperation and provide some bases for policy guidance for credit and rural development programs, the Ibirubá Pilot Project was developed. This project had as its basic tenant the provision of "unlimited" quantities of agricultural credit to small farmers with normal bank lending procedures, policies and terms. The basic question was: Will an infusion of agricultural credit stimulate small farmers to accelerate adoption of new techniques and increase their productivity and income levels if the necessary new technology is available and the infrastructure delivery system present? The project was planned to include an extension program to provide technical information along with additional credit.

#### Background on Area

The small farmers for whom the Project was developed are part of a dual agrarian structure in Southern Brazil made up of small colonial farms and large extensive ranches. This structure is the product of two settlement patterns. The ranches of several hundred hectares are in the open plains areas of the southern states settled first by Portuguese and Spanish cattle ranchers. The small farm agriculture area located in the mountainous and wooded areas was settled later (1820-1920) in smaller plots, principally by German and Italian immigrants and their decendants. In the colonial areas, the pressure of rural population growth and division of land among heirs has gradually reduced initial farm sizes from approximately 30 hectares to the present average sizes of 10 to 20 hectares. [Rask, 1968]

These small farms are presently operated on a part subsistence, part market oriented basis. The percent of total production consumed by the farm family varies considerably -- from 30 to 80 percent. The farms are predominantly owner-operated. Less than 5 percent of the farm operators rent all their land, while another 10 percent rent small additional portions to enlarge their farm operations.

The labor is supplied almost exclusively by the operator and his family. In some cases small amounts of seasonal labor are employed to meet peak labor demands. On most farms the supply of labor during much of the year exceeds that needed to perform productive farm operations. For example, a typical 15 hectare farm would have about two times as much labor available as can be productively utilized, while a five hectare farm would have from three to four times as much labor as needed. [ Sá, 1965 ]

Although the farms are small, several different livestock and crop enterprises are usually found on each farm. For instance, almost all farms have dairy cows, poultry and hogs, and raise a variety of crops for sale, livestock feed or family consumption. Corn is the principal crop and normally occupies from one-half to two-thirds of the cultivated area. It is used principally as feed for swine, the major livestock enterprise and source of income. The principal cash crops are soybeans, wheat, tobacco and black beans.

Agricultural operations are performed largely by hand methods and animal power. Tractors and mechanical land preparation and cultivation are not common. Animal power and hand methods of performing farm operations are indicative of the low technology levels. Lime and fertilizer use, hybrid seed, seed inoculation, modern swine housing, and balanced hog rations are not common in the area. Crop and livestock

productivity levels are low. For a sample of 105 Ibirubá farms in 1965, the average gross output per man equivalent of labor was \$477. The gross output per hectare for this same sample of farms was \$72. [Barranda, 1970] The farm operators' incomes on the small farms are not commensurate with the minimum wage established by law for wage workers.

The município (county) of Ibirubá, chosen for this Pilot Project, is located in the small farm region of Rio Grande do Sul, the southern most state of Brazil. The município contained most of the infrastructure necessary for the servicing of a modern technologically advanced agriculture. Inputs were available locally and extension and banking services were located in the county seat. [Erven, 1969]

There were two commercial banks located in Ibirubá which loaned to farmers. The agricultural lending of these two banks was primarily to small farmers in Ibirubá. However, they were very restrictive in loan amounts, purposes for which they would loan, and repayment period. They charged the standard 12 percent interest plus one percent service charge which was established by law for all Brazilian banks. However, this interest rate was negative in real terms because of the high inflation rate.

There was no Bank of Brazil agency in the município at the inception of the Project. To borrow from this bank, Ibirubá farmers had to travel approximately 30 miles to the county seat of a neighboring município. The Bank of Brazil had traditionally supplied a major part of the agricultural credit in Brazil. Relative to the two Ibirubá banks, the Bank of Brazil allowed much larger loans on a per hectare basis, loaned for investment and livestock production purposes as well as crop production, and allowed much longer repayment periods. The Bank of Brazil was the major source of financing for the relatively few medium and large size

farms in Ibirubá having been particularly instrumental in bringing about increased wheat production and mechanization through its lending practices. It had special lines of credit to finance farmers producing wheat and help them mechanize their cash crop enterprises. Few small farmers in Ibirubá, however, borrowed from the Bank of Brazil.

With the restrictive policies of the two Ibirubá banks and the Bank of Brazil orientation to large farms, the small farmers in Ibirubá were not influenced much by agricultural credit prior to the Pilot Project. However, it was found in a 1965 study that more than 90 percent of the farmers interviewed felt they could advantageously use more capital. Moreover, a high percentage of these farmers thought they could get additional credit from the banks. They evidently did not borrow more because of the restrictive loan sizes, purposes and repayment periods, and the inflexibility in bank policies to reflect individual farm differences in capacity to use and repay credit. [ Erven, 1969 ]

#### Project Description and Implementation

Early in 1966, the possibilities for some kind of agricultural credit pilot project were discussed by personnel from several different agencies. The original idea for the Pilot Project had come from technicians in the USAID Mission headquarters in Rio de Janeiro. The discussions were stimulated by Brazilian and American technicians at the Federal University of Rio Grande do Sul (URGS). Two banks, the State Extension Agency (ASCAR), the State Secretariat of Agriculture, and the University were all involved in the design and implementation of the project. The Project was administered and coordinated by the Institute of Economic Research (IEPE) of the Federal University of Rio Grande do Sul. All the participating agencies signed a formal project agreement with three objectives specified:

- (1) To make available a substantially increased amount of agricultural credit under existing bank terms to increase the level of agricultural productivity,
- (2) To provide the complementary services necessary to facilitate the rational use of the credit, and
- (3) To measure the results of the Pilot Project in terms of increased productivity and the applicability of this approach on a broader basis [ Souza, et.al., 1967 ].

In addition to the explicitly stated objectives, there was an implicit interest of the participants in determining if such a comprehensive project was feasible at the local level and in determining the feasibility of integrating and coordinating the activities of several local, state, and federal agencies.

The strategy for implementation of the Project may be summarized as involving (1) an infusion of substantial amounts of agricultural credit relative to what had been available from formal sources in the municipio, (2) orientation of extension activities and other technical assistance programs to complement the additional credit being made available, (3) initiation of an extensive soil testing program to stimulate interest in increased fertilizer utilization and to better orient its use, and (4) evaluation of the economic consequences of the Project.

The target group for this Pilot Project was the small farmers in the municipio of Ibirubá with inadequate sources of formal credit to capitalize on their development potentials. However, during the process of the Project, the credit was made available to any farmer in the municipio who applied to either of the participating banks and was able to meet their loan requirements. These requirements were minimal as nearly all farmers who applied were granted a loan.

The Project was initiated in August 1966 with preparatory activities including local publicity, soil testing, and initiation of farmer orientation concerning the use of the additional credit. However, the first funds were not loaned through the Project until late October 1966. This was after the optimum corn and soybean planting season had passed. Although the Project plan called for lending activities to begin well in advance of the planting season, funds were not released on schedule from the Central Bank to the two participating local banks. This delay in release of funds seriously impaired the functioning of the Project as the early lending activities were on a "crash" basis due to the timing problem. The enthusiasm and support which had been generated for the Project were evidenced by the more than 300 farmers and local leaders attending the opening ceremonies.

Each of the two local participating banks received NCr\$500,000 from the Central Bank of Brazil for the Pilot Project.<sup>1/</sup> Although the original plan called for the banks to lend under existing Central Bank policies, the two banks in a separate agreement set forth several restrictions on their lending policies for the Pilot Project. Of the restrictions imposed, the most important were a loan limit of NCr\$1,000, one year repayment period for practically all loans including those for investment purposes, and severe limitation of credit for livestock inputs. Additionally, a farmer borrowing for crop production expenses only received 50 percent of the principal at the time the loan was approved. He received another 40 percent within 45 to 60 days and the final 10 percent at harvest time. These various restrictions resulted

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<sup>1/</sup> In October 1966, \$1.00 equaled NCr\$2.20.

in the Pilot Project being restricted largely to short term crop production loans during the first few months of its operation. Reacting to farmer complaints and pressure from other participating agencies, the two banks gradually liberalized their lending practices during the life of the Project.

Early in the Project, the participating agencies maintained relatively close contact with each other and the farmers in Ibirubá, periodic evaluations were made and some steps taken to improve the functioning of the Project. However, following this first wave of enthusiasm and dedication to the Project, interest wavered, and more importantly key personnel did not continue to place high priority on the Project. Also, arrangements were not made for additional funds, needed changes in administration and strategy were not made and lack of needed integration of credit, technical information and technical assistance all contributed to the Project's termination in December 1967.

Immediately following the termination of the Project, the Economic Research Institute (IEPE) conducted a farmer survey in Ibirubá to determine the impact of the Project.

#### Project Results

The Ibirubá Pilot Project functioned for only 15 months. This was insufficient time to provide definitive answers for all the questions raised. However, there are several important results concerning credit infusion as a small farmer development strategy.

#### Increased Credit Use

The Pilot Project resulted in a significant increase in the use of agricultural credit in Ibirubá. During the year preceeding the Pilot Project, the two participating Banks made 719 loans to farmers in Ibirubá

with an average loan size of NCr\$327. During the first 70 days of the Pilot Project, these two banks made 623 loans, 279 of which were to farmers who had not borrowed from any bank during the previous three years. During the first 6 months of the Project, 1,003 loans were made and by the end of the first year of the Project 1,546 loans had been made. These 1,546 loans averaged NCr\$822.<sup>2/</sup> Thus, in one year there was more than a five fold increase in the amount loaned by the two banks. This was accomplished by a 2.2 increase in the number of loans and a 2.5 increase in the average loan size.

Among the 1,546 loans, there were 943 different borrowers from the Pilot Project. Ninety of these also borrowed from the Bank of Brazil during the same period. Of the 943 borrowers, 542 had only one loan through the Project, 251 had 2 and 150 had 3 or more. Loan default was not a serious problem.

Nearly two-thirds of the Pilot Project loans were for crop production costs. Approximately 18 percent of the loans were for livestock production costs and 19 percent were for investment. The 19 percent for investment purposes was about the same as the percentage of loans for investment the year before the Project but the percentage of livestock production loans increased from 12 to 18 percent of the total and the crop production loans decreased from 68 to 62 percent.

#### Comparison of Borrower and Non-borrower Groups

In the post-Project evaluation study the farmers of the municipio were divided into three groups for sampling based on their borrowing activities during the life of the Pilot Project. The first group included the farmers who had borrowed through the Pilot Project but not

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<sup>2/</sup> These and the data which follow are from [ Konzen, 1969 ] Konzen's work includes a comprehensive description and economic analysis of the Pilot Project.

the Bank of Brazil. The second group included the farmers who had borrowed from the Bank of Brazil. They may also have borrowed through the Pilot Project. The third group included the farmers who did not borrow from any of the 3 banks involved in the first two groupings.

The borrowers from the Bank of Brazil had significantly larger farms and machinery investment than the other two groups (Table 1). There was little difference in livestock herds of the three groups. The Bank of Brazil borrowers had a much higher investment in machinery than the other two groups and more man equivalents of labor. Credit for operating costs and new investment was more important on a percentage basis for the Bank of Brazil borrowers than for the Pilot Project participants.

Table 1. Summary Data for Pilot Project Borrowers, Bank of Brazil Borrowers and Non-Borrowers, Ibirubá, 1967

Item	Pilot Project Borrowers	Bank of Brazil Borrowers	Non-Borrowers
Farm size in hectares	32.6	58.1	30.1
Livestock in animal units	16.6	14.6	13.4
Machinery investment in NCr\$	3,897	13,844	2,175
Man equivalents of labor	2.9	3.4	2.7
Operating cost equity	56%	49%	100%
New investment equity	81%	52%	96%

Source: [ Konzen, 1969 ]

Neither the participants nor non-participants had significant changes in land owned, operated, or cultivated during the life of the project. Renting of land was insignificant. The participants of the project had significantly different land use patterns than the non-participants. The participants doubled their area planted to wheat while the non-participants did not change their area. The participants

increased their soybean acreage two times more than the non-participants. The participants decreased the size of their swine herd while the non-participants did not. The decrease in swine herd and corn production accompanied by an increase in wheat and soybean production demonstrates a tendency on the part of the Project participants to substitute cash crop production for swine production. These enterprise changes of the participants relative to the changes of the non-participants were to be expected given the bank emphasis on crop production credit. Although swine production had been a major source of income for the participants, improvements in this enterprise were not initially supported by the Pilot Project.

The Project had as a major objective the increase of agricultural productivity in the municipio. This result was expected through the application of more and better quality off-farm inputs. However, one year after implementation of the Project, no significant changes in productivity were found. The farmers that utilized credit to increase the level of inputs did not obtain higher yields than those that continued with the traditional inputs. Also, their incomes did not increase relative to the non-participants. However, these data are inconclusive for several reasons. The credit did not become available until late in the corn and soybean planting season. Consequently, lime and fertilizer application and planting were not timely for the credit financed crop enterprises. The 1966-67 crop year was abnormal due to rainfall extremes and insect problems. The benefits from additional investments would be expected to continue for several years.

Bank Participation

The two banks loaning to farmers through the Project did not become convinced of the efficacy of providing agricultural credit to small farmers. A general unwillingness to enthusiastically support continuation of the project is one indicator. Failure to liberalize lending practices is another. Though the project was specifically oriented toward increasing agricultural credit and the sources of funds were provided from outside the private system, the banks could not be persuaded to liberalize their lending practices in accordance with those followed by the Bank of Brazil. Additionally, the Pilot Project did not reduce the Bank of Brazil borrowing by Ibirubá farmers. This bank made 200 loans to Ibirubá farmers during the first 10 months of 1967. More than 30 percent of these loans were for investment purposes versus 19 for the project loans. The average loan value was NCr\$6,561, approximately 8 times higher than the Pilot Project loans. In contrast to the NCr\$1,000 maximum loan for the Pilot Project, the Bank of Brazil had no maximum. The loan size was based on capacity to use credit as demonstrated through a partial budget worked out in cooperation with the Bank.

The issue of agricultural credit was different for the Bank of Brazil as it was mandated by the Government of Brazil through earmarked funds to loan to farmers. However, for the banks participating in the Project, the relative profitability of agricultural credit was of real concern. It appears that small farmer loans were not sufficiently profitable to sustain the interest of these banks. This conclusion is difficult to quantify, since it in part reflects a subjective judgment of the desirability of assisting small farmers. However, other work supports the low profitability hypothesis [ Rask, et.al., 1971 ].

### Soil Testing Program

The soil testing program conducted as an early and preparatory part of the Pilot Project was very successful. Although this was the first soil testing campaign organized to reach a large number of farmers in any municipio of the state of Rio Grande do Sul, 2,450 soil samples were taken, analyzed, and results returned through the extension agents to individual farmers. This resulted in a marked change in attitude towards soil testing, soil fertility, and the utilization of lime and fertilizer to improve crop yields. The fertilizer suppliers were also influenced as they modified their fertilizer formulations to correspond to the soil test results.

### Improved Inputs

The soil testing program, stepped-up extension activities and more intensive use of the informational system in the municipio substantially increased interest in and use of non-farm inputs. The participants of the Project increased their use of these inputs relative to the non-participants. However, there were some technological bottlenecks. Of particular importance and concern was the inappropriate use of improved inputs which reflected the lack of technical assistance for the borrowers.

### Other Results

The informational system of the municipio was also modified and more intensive use made of existing means of communicating with farmers. A series of leaflets were published locally and distributed to farmers through extension agents and the participating banks to provide information relative to crop and livestock production practices. Although the extension agents had regularly participated in radio programs

designed for small farmers, the number of such programs was increased and specific orientation given to utilization of the credit available.

Perhaps the most important result of this Project for the agricultural development of the state was the interest the Project generated in neighboring municipios. Shortly after the soil testing program had been completed in Ibirubá and the additional agricultural credit had become available, inquiries were made in Ibirubá by the leadership of a neighboring municipio as to how they might implement a similar program. These original inquiries led to a second soil testing program in the Santa Rosa region that evolved into a very successful integrated local development program, Operação Tatu. This new program centers on problems of soil improvement and increased crop production and integrates activities of agricultural agencies toward these common objectives [Beatty, et.al, 1971, Murdock, et. al., 1971]. Interagency cooperation is being achieved. The integrated package has come to include soil improvement, improved crop production practices, credit, technical assistance, hybrid seed, and dynamic local leadership.

#### Lessons To Be Learned

The Project clearly demonstrated that the target group would respond positively to new programs and were willing to quickly make changes in their operations. Some examples of changes are the increase in number of borrowers, the increase in credit per borrower, the participation in the soil testing program, the reduction in corn production accompanied by increases in wheat and soybean production, increased non-farm input use and increased investment in fixed inputs.

The rationing of credit for small farmers by the banks was a major issue orienting the conceptualization of the Pilot Project. The

Project plans called for an infusion of credit to eliminate this external rationing. The results of the project, as noted above clearly supported the original external rationing assumption. However, while the small farmers were eager to absorb additional quantities of agricultural credit, the private banks were not equally persuaded that this was an area of interest for them. The additional restrictions placed by the banks resulted in the farmers not being able to borrow as much as they wanted or for all the purposes they wanted. The credit terms from the two participating banks were liberalized during the Project but remained considerably more restrictive than those of the Bank of Brazil.

Lack of agency cooperation, duplication of programs and lack of enthusiasm and motivation of local level technicians had been serious problems in Rio Grande do Sul. The Pilot Project demonstrated some feasible alternatives for attacking these problems. A key was the identification of the activities from various agencies which would contribute directly to the realization of Project objectives. A sense of being part of an accepted community program effort seemed to improve agency cooperation. More importantly, local bank officials, extension agents, community leaders and others involved at the local level had observable increased motivation and interest in working with farmers to make the Project a success.

This failure of the Project to function more than 15 months and become institutionalized is of major concern. Of particular concern is lack of continued interest of the bank personnel. The reasons for this outcome appear to be largely economic. The banks must not have had sufficient profits from participating in the Project to induce them to continue. Their non-agricultural and large farmer lending activities probably continued to be more profitable. Initial participation by the

banks may be explained by pressures from local and state agency administrators and the banks' genuine interest in a hard look at the possibilities of credit infusion for small farmers coupled with a technical assistance program.

There are some specific implications from the Pilot Project for those interested in the same approach in other areas, which have conditions similar to those in Ibirubá. High priority needs to be placed on institutionalizing the positive aspects of the program, recognizing bottlenecks as they develop during the project and making modifications necessary for the continued functioning of the project. Three factors appear to be fundamental, (1) There must be integration of credit, technical assistance, improved production technology and coordinated support and involvement of local and state agencies, (2) This integration and support is possible over a longer period of time only if the banks have a sufficient profit stimulus which assures their continued and aggressive involvement in lending to small farmers, (3) Any bottlenecks in farm production technology must be removed through research and farmer education. An infusion of credit for small farmers makes no sense in the absence of profitable opportunities which can be exploited through use of additional capital. These conclusions have been confirmed by the previously mentioned success attained through the now widespread local development program for small farmers, Operação Tatu.

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