

**Land and Credit Reform in Mexico:  
Implications for *Ejido* Credit Use, Investment, and Production**

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## 1. Introduction

In 1992, the Mexican congress passed legislation opening the way for the privatization of communally-controlled *ejido* land. *Ejidors*, communities created through the revolutionary land reform of 1917, control half of Mexico's agricultural land, making the potential impact of the legal changes very significant. One of the major goals of the reform is to increase efficiency and output in agriculture by allowing the market to allocated resources (Téllez K., 1992). In particular, the elimination of barriers and distortions associated with the *ejidal* tenure system is intended to give farmers both the ability and the incentive to invest in improved production practices. Underlying the Mexican reform program is the hypothesis that private property rights in land will facilitate access by farmers to formal credit market, leading to increases in credit use, investment and output in agriculture.

The success of the reform depends critically on the extent to which *ejido* farmers are currently constrained in the access to bank credit. If there is excess demand for credit, the reform may release a binding constraint on farmers and achieve its investment and output goals. If farmer's are not currently facing constraints in access to bank credit, however, the reform may not significantly affect the circumstances in which they produce, and will therefore not likely affect their production decisions. This paper analyzes small farmer demand for credit demand and use in Mexico to see whether there is evidence that the reform is likely to achieve its goals.

Section 2 of the paper briefly analyses the 1992 constitutional reforms and discusses their impact on *ejidos*. Section 3 reviews empirical evidence on small farmer credit demand and its implications for the land tenure reform. Section 4 places the results of section 3 in the context of the broader policy reforms that have occurred in Mexico over the past decade. It argues that it is only in this context that farmer behavior, and therefore the impact of the new land laws, can be understood. Using data from four *ejidos*, section 5 brings the analysis together in a study of changes in household economic strategies between 1984 and 1996. The goal of the analysis is to understand household economic behavior and to identify not only impact of the reform but also possible policy options that could complement the reforms and help them achieve their goals of increasing rural output and incomes.

## 2. Land tenure reform in Mexico

### 2.1 Background

Article 27 of the Mexican Constitution of 1917 contains the legal framework for Mexico's agricultural, land, and natural resource policy. Prior to the 1992 constitutional reforms, these laws reflected the national commitment to an agrarian policy based on state control of resources and land re-distribution. Under this system, large, private land holdings were subject to expropriation by the government and re-assignment to groups of peasants, known as *ejidos*. According to the law, any citizen who met certain criteria had a right to membership in an *ejido* and access to land.<sup>1</sup> As a result, the redistribution of land was an ongoing process. Every Mexican president since the revolution, including the current President Ernesto Zedillo, has given some land to the *ejido* sector (Thiesenhusen).

During the 1950s and 1960s the growth rate of Mexican agriculture was the fastest in Latin America, averaging about 7 percent per year (Yates; Thiesenhusen). This period of growth followed the first wave of massive land redistributions, however much of the increase in output came not from the change in land tenure system but from increases in farming intensity by all farmers, especially private farmers (Yates).<sup>2</sup> By the 1970s, the major irrigation projects were finishing and the new land being brought into production was generally marginal in terms of productivity. The rate of growth of agricultural production dropped to around three percent per year, and by the late eighties, it had become negative (Téllez K., 1992). Over the same period, demand for food increased as a result of population growth and price policies favoring the growing urban sector (Paguaga et al). Since the 1970s, Mexico has been a net importer of food (ibid).

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<sup>1</sup> Applications for *ejido* grants were made by groups of 20 or more individuals. Eligible applicants had to be Mexican by birth, 16 years of age, residents of the applying village for at least six months, and planning to work the land as a primary occupation. There were restrictions on the amount of private land and capital that an individual could possess. There was also a minimum amount of land per *ejidatario*, though in practice this is not observed (Wilcox).

<sup>2</sup> While the agrarian reform legislation was part of the constitution of 1917, it wasn't vigorously implemented until the 1930s when the reformist president Lázaro Cárdenas came to power. During his term in office, nearly 18 million hectares were redistributed, more than under any other president before or since (Morret Sanchez).

During this same period of declining growth and increasing demand, the *ejido* system began to come under attack on efficiency grounds. Critics considered it to be an institutional impediment to increased productivity in agriculture, arguing that it distorted incentives regarding investment, production practices, and land stewardship, and that it undermined the ability of farmers to respond to a changing technological and demographic environment (Yates).<sup>3</sup> *Ejido* land use was highly restricted. *Ejido* land could not be rented, mortgaged or sold, and *ejidatarios* were forbidden to hire workers to work their land or to form partnerships with outsiders to produce.

Attempts to reform the system met with resistance from *ejido* members and their supporters. *Ejidors* remained politically popular in Mexico in part because they served as a visible sign of the government's continuing commitment to the principles of the revolution (Thiesenhusen). Some reforms in agricultural and rural policy, specifically credit policy, were achieved, however during the 1980s, significant reform was considered politically infeasible (Appendini).

The Salinas administration, with its focus on market reform and international competitiveness, took on *ejido* reform as part of the preparation of the Mexican economy for NAFTA. During 1990 and 1991, many remaining subsidies, price controls and tariffs were further reduced or eliminated (Bossels; Myhre). According to one survey by the agriculture department, these policy changes put farmers in a cost-price squeeze that rendered half of the land in production unprofitable in the new economic environment. (Fritscher and Steffen).

It was in this context that, in November of 1991, President Salinas announced reforms to Article 27 of the constitution that would end the creation of new *ejidos* and begin a voluntary process that could lead to the dissolution of existing ones. The plan was rapidly approved by the Congress and the state legislatures--too rapidly, some allege--and became law in January 1992 (Télez K., 1992; DeWalt and Rees; Stephen, 1997).

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<sup>3</sup> For a comprehensive review of studies comparing the productivity of *ejidos* and private farms see Heath.

## 2.2 The impact of the reforms

The 1992 legislative reforms make essentially three main changes. First, it ends the governments responsibility to provide landless peasants with land. Second, it weakens some the restrictions on *ejido* land use, specifically on land rental and sale. Third, it initiates a process through which *ejido* farmers can receive individual titles to their *ejido* land. These titles can be pledged as collateral for bank loans. While the impact of eliminating restrictions on land transfers is potentially dramatic, in reality the transfer restrictions had never been enforced. There is ample evidence of widespread violation of the restrictions (Dewalt and Rees). Therefore, while the new legislation may have positive marginal impacts by taking land transactions out of the black market, it is unlikely to significantly affect the volume of such transactions, and therefore to have an impact on production.

What impacts will the issuing of land titles have on production? According to economic theory, there are a variety of ways in which a title could affect productivity. First, a title provides security, which in turns increases the owner's incentive to invest in the land since he or she is more certain of being able to reap the rewards of investment. Security is an important benefit, however it is not really new in the 1992 reform since *ejidatarios* have always had secure use rights to their parcels.

A second benefit of a title is that it permits land transfers. Ability to transfer a title can also increase a farmer's incentive to invest since the investment can be recovered via land rental or sale in the event of a liquidity crisis. Furthermore, ability to transfer land allows it to move from low productivity to high productivity uses, increasing over all efficiency in the economy. As mentioned, earlier, land transfers were common in the past in spite of lack of titles. Therefore, it is unlikely that the titling program will have more than a marginal impact on land prices and production.

A final benefit of a title is that it can be used to guarantee loans from lending institutions. As such, a title can increase the owner's access to credit, and may therefore increase the amount that he or she invests in the land, which in turn could result in increased production. The ability to mortgage land is indeed new in the 1992 reform. It does not appear that *ejido* land was used as collateral prior to the reforms (Myhre).

It appears that the major change that the 1992 reform provides to *ejidatarios* is an increase in their access to credit. How important is this benefit? It could potentially be very important. As mentioned earlier and as shown in Table 1, official support for agriculture—a large part of which was directed towards *ejidos*—has declined substantially over the past decade in both relative and absolute terms. The official government bank for agricultural, Banrural, loaned 29 percent of all agricultural credit in 1988. In 1992 it was the source of only eight percent. Over that same period, agricultural credit from private sources has increased in both relative and absolute terms, however the conditions governing this credit are quite different. Among the major differences is that collateral is almost certainly required. Allowing *ejidatarios* access to this source of credit would appear to be a prerequisite for their ability to continue producing, which is a strong argument in favor of the land titling program.

### 3. Evidence on the Demand for Credit by *Ejidatarios*

#### 3.1 Some empirical evidence

While it is too early to know what the real, long-term impact of the reform will be, we can look for evidence that the logical links from title to credit to investment to output that underlie the reform are functioning. One of the critical links is the assumption that *ejido* farmers want more credit. If this is true, then they will have incentive to participate in the PROCEDE program and to use their new titles as collateral. If not, then a title may be of little economic value to them.

The fact that PROCEDE is a voluntary process provides researchers with an opportunity to study what affects the demand for a private title. This is a rare opportunity since land tenure changes are generally not made at the individual level. In a previous study, I used data from participation in the PROCEDE program to look for evidence of credit constraints (Johnson). If the main benefit of PROCEDE is access to credit, then those most likely to benefit, ie those with “collateralizable land” should be most likely to participate. Collateralizable land is land that can be cropped by an individual. The reform would not offer *ejidos* that contain primarily forests, pastures and other types of collective or non-cultivable land the same types of economic incentives. If farmers want credit and the principal value of a title is that it gives access to credit,

then collateralizable land should be a determinant of participation. In fact, I failed to find a significant relationship between participation and collateralizable land. This results, which is consistent with recent work on farmer demand for formal credit (Kochar, Feder et al), suggests that demand for credit is not motivating participation, which in turn implies that the reform is unlikely to have a significant impact on *ejido* credit use.

Making inferences from analysis of existing data is one way to gather evidence on farmers demand for credit and the impact of the reform. Another way is simply to go to the field and ask *ejidatarios* directly. In the summer of 1996 I visited four *ejidos* with a team of anthropologists from the University of Pittsburgh and the Autonomous Metropolitan University in Mexico City. In addition to questions about land tenancy and use, employment and income sources, and agricultural production, we asked farmers their opinion about the major problems they faced and what they thought about the future of agriculture in their community. Virtually across the board, the number one problem that farmers said they faced was lack of credit! This would appear to contradict the earlier findings in the PROCEDE participation analysis.

### 3.2 What does credit mean?

Does this mean that either my analysis of PROCEDE or the farmers' analysis of their situation is flawed? Not necessarily. One way to explain the apparent inconsistency would be to say that credit is not defined the same way in the two studies. An anecdote helps explain. During the first few days of interviewing in the community of Quebrantadero, Morelos, our survey questions about credit use turned up a few cases of *Crédito a la Palabra* and one instance of credit from a sugar refinery to a sugar cane producer. There did not appear to be any loans from banks, credit unions, informal money lenders, or other individuals in the community. I began to wonder whether rural credit markets--both formal and informal--in Mexico were substantially different from what I expected based on reading about other countries. Or perhaps people were simply unwilling to give us this kind of information?

In a conversation with a colleague, a Mexican anthropologist who grew up in an *ejido*, I expressed my concern about the lack of credit, especially informal credit, in the community. In the next interview, we asked the usual questions off the interview schedule about credit, and received the usual answer, "We had no credit last year." Why not? "Because there wasn't any."

Instead of moving on to the next question, my colleague asked whether or not the respondent had had any loans last year, or whether or not he had asked to borrow any money.<sup>4</sup> This new vocabulary--loans and borrowing-- did the trick, revealing a vast and diverse system of lending and borrowing that people apparently did not immediately associate with the word credit. When we revisited the earlier interview subjects, it turned out that many had, in fact, borrowed money in the past year. They were not deliberately withholding information. We just hadn't asked for it correctly.

For most farmers, the word credit seems to mean credit from the government. Further, it generally implies low- or no-interest loans that are accompanied by technical support and insurance, and that come in quantities large enough to cover all planned expenditures. Credit may or may not require repayment, either in theory or in practice. Countless people told us that the only credit available is *Crédito a la Palabra* (CAP) and PROCAMPO. CAP is a no-interest loan program in which the money, upon repayment, is returned either to the individual or the community to be used for productive investments. PROCAMPO is a per-hectare income support payment to producers. The fact that people consider these transfer payments to be credit programs says a lot about how past credit programs really worked.

The value of recognizing this operative definition of credit is not only to help future field workers or to add linguistic evidence to the already overwhelming economic evidence of the inefficiency of past public-sector credit programs in Mexico. The point is that credit was an important and stable income source for farm households. While they used the word credit, what people were really talking about was the financial support that they used to receive from the government. At various times in the past, in addition to providing production and investment credit--in cash and in kind--the government also subsidized input prices, guaranteed output prices, insured the harvest, and, when necessary, forgave any outstanding debt. Farm households now find themselves in a new and uncertain environment where they must re-consider not only their agricultural operations, but their overall income-generation and consumption strategies.

The logic of the land tenure reform appears to have taken the narrow view that the credit offered by commercial banks could substitute for the "credit" that was previously offered by Banrural and its predecessors. Obviously there would be some marginal differences in quantities borrowed since a subsidy is always better than a loan, but in general it was assumed that the

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<sup>4</sup> In Spanish, the difference is between *tener crédito* and *pedir prestado dinero*.



farmers would make the transition from borrowing from the government to borrowing from the banks. This assumption drastically underestimated the importance of the extent to which past government credit programs affected the perceived risks and rewards of agriculture and the role that agriculture could play in a household's economic strategy. In many cases, households seem to have responded to its loss not by switching from one credit source to another and maintaining or increasing production but by diversifying their overall economic strategies. This has meant simply maintaining or even reducing the resources they devote to agriculture.

#### 4. Implications for household level economic and agricultural strategies

It does not appear that farmers are making a large-scale switch from government to commercial credit for agriculture. Their responses to the new economic and policy environment in which they find themselves are more complex. In order to get some insight into what will happen to rural Mexico and to agricultural production, this section will analyze the economic strategies of households in the four study *ejidos*. The analysis puts into context the previous analysis, and helps to identify patterns of productive behavior that have implications not only for long-term development prospects but also for possible policy options designed to increase rural productivity and income and productivity in the long run.

The study three communities are located in central and northeastern Mexico (see Map 1 and Table 2). All could be characterized as small holder production systems, through average land holdings vary from 5 –24 hectares. Two of the communities, Porvenir and Quebrantadero, have some irrigated land; the remaining *ejidos*, Alcalde y Bateas and Derramaderos, have none. All of the *ejidos* produce sorghum and maize. At one extreme is Porvenir, where maize is essentially monocropped. At the other are Alcalde y Bateas and Quebrantadero, where sesame and horticultural crops, respectively, compete for land area with basic grains. Quebrantadero is the only community in the survey to have completed the PROCEDE program. Derramaderos was in the process while we were there. Alcalde and Bateas rejected participation, and in Porvenir, an administrative problem—loss of the official act of incorporation—was preventing the otherwise willing *ejido* from entering.

Among the four communities, three distinct patterns of economic behavior at the community level are observed. Comparing the 1984 and 1996 data, it appears that one

community is pursuing a path of agricultural specialization and intensification (Porvenir), another a strategy of income diversification with agricultural intensification (Quebrantadero), and two others, a path of income diversification and agricultural de-intensification (Alcalde y Bateas and Derramaderos).

#### 4.1 Agricultural specialization and intensification

Porvenir is located in the border state of Tamaulipas. The community had a population of about 800 in 1996. The *ejido* contained 2500 hectares, about half of which are irrigated. Unlike the other *ejidos* we studied, land holdings in Porvenir are quite uniform; each *ejidatario* has 15 irrigated hectares and about 9 hectares of pasture. These relatively large parcels of arable, irrigated land, all of which are irrigated, permit the *ejidatarios* to engage in intensive agriculture. Table 3 shows the basic production information for maize production in 1984 and 1996. In spite of the withdrawal of government support, *ejidatarios* have intensified their production, using more inputs and obtaining higher yields.

Credit for production, which in 1984 came exclusively from Banrural, now comes primarily from banks (Table 4). Many farmers in Porvenir borrow from banks and guarantee the loans with titles to tractors and other farm equipment. Since the *ejido* has not yet completed the PROCEDE process, they cannot use land titles as collateral. The case of Porvenir is interesting in that it shows that in the more highly productive *ejidos*—those that would be most likely in theory to respond to the incentives offered by a land title—farmers may already own other assets which they can use to secure credit. Hence for them a land title may be redundant.

Specialization in agriculture has been accompanied by an operational concentration in land. Fewer farmers are working more land, and the number of farmers renting their land out has increased. Many of these farmers say that they do so because they cannot get credit. However when questioned many acknowledged that there is credit available, but you have to mortgage something, which they are unwilling to do.

While total output from the *ejido* has increased since 1984, the fact that much of the land is rented to people from outside the community likely accounts for the fact that agricultural income now makes up a smaller percentage of total income than in 1984. As Table 5 shows, percentage of income from agriculture has dropped from 69 to 29 percent. The category other

income has risen dramatically. Part of this is because POCAMPO, subsidy payments to land owners, are included in this category however it also reflects the increase in rental income. Specialization and concentration in agriculture have also led to a difference in income between producers and non-producers in the community. Since the community is small and relatively inaccessible, there are very few options for those who do not produce. Income inequality is evident in Porvenir.

Overall, Porvenir has increased its agricultural output, which is consistent with the goals of the reform. However it would be hard to claim that the tenure reform contributed to this since the *ejido* has not completed PROCEDE. It appears that renting has increased, however residents do not associate renting with the 1992 reforms. It most likely began after the 1989 credit reforms. Porvenir's long run prospects may not be so bright however. The specialization in maize production could be a problem if and when maize ceases to receive protection from the government in the form of guarantee prices and/or import duties. Porvenir could have potential as a producer of horticultural crops, however the lack of infrastructure and low levels of education may work against it in terms of being able to take advantage of new market opportunities.

#### 4.2 Income diversification with intensification of production (Quebrantadero)

Quebrantadero is the largest of the *ejidos* studied in terms of population. In 1996 it had approximately 2000 inhabitants. It is also the most favored *ejido* in terms of location. It sits alongside a major highway a few hours from Mexico City and other population centers. In 1984 Quebrantadero produced corn and sorghum, and horticultural crops were beginning to take hold. In 1996, horticultural crops occupied a third of the land area of the *ejido*. The expansion of irrigation is responsible in large part for the ability to produce these high value crops. As Table 6 suggests, production has intensified in Quebrantadero as well. Sorghum is slightly more capital intensive in 1996 than in 1984 in spite of the termination of government support for the crop.<sup>5</sup> Production figures for onions are also given, demonstrating that significant investments are being made in agriculture in Quebrantadero. Input costs for onions are more than four times as high as

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<sup>5</sup> Data for maize is not present because in 1984 maize was primarily a dry land crop and in 1996 the majority of maize was irrigated. Thus production data is not directly comparable, though we can say that irrigated maize is higher input and higher output, which means that overall maize output from the *ejido* has increased.

those for maize or sorghum, and net profits are even higher. Credit to support agricultural production is also diversified in Quebrantadero, as shown in Table 7. Dependence on the government bank has lessened, and both commercial banks, informal loans and alternative sources such as companies now make loans in the community.

Part of Quebrantadero's agricultural intensification is due to its proximity to population centers and therefore to markets. There are many feedlots in the area, and Quebrantadero farmers are involved in the industry both as livestock owners and as suppliers of grains for animal feed. The proximity to populations centers also offers alternative employment opportunities, which contributes to the communities diversified income structure. As Table 8 shows, the largest source of income in Quebrantadero is wages and salaries. Agriculture has declined substantially since 1984 in spite of the specialization. Migration income has also grown substantially in Quebrantadero since 1984. Migration is an important characteristic of the community today, and an important source of investment. The migration pattern in Quebrantadero is for migrants to go to the US for a short period of time and return with money to invest in productive activities in the community such as buying land or livestock or building houses.

As a community Quebrantadero is progressing. It is the only community in which average household income increased between 1984 and 1996. In Quebrantadero we did find cases of farmers using their land as collateral for loans, which suggests that some are taking advantage of the benefits of the 1992 reforms. This community is well placed to take advantage of the opportunities offered by the broad economic reforms in Mexico, and appears to be doing so.

#### 4.3 Income diversification and agricultural de-intensification

The communities of Alcalde y Bateas and Derramaderos are very different communities, however they share certain characteristics that make them similar in the economic strategies pursued by their residents. Neither community has irrigation, and they are located in relatively high risk production environments, Drought-prone Derramaderos is an especially risky production gamble. The communities are also not easily accessible. Engaging in economic activities with the rest of the world imposes high transport costs on Alcalde y Bateas, located on

the far size of a river from population center. Small traffic passes on a boat, and large trucks must make lengthy detours to reach the nearest bridge. These factors make agriculture and many other types of economic activities less profitable for the communities.

As Table 9 shows, there has been a de-intensification of agriculture in the communities since 1984. Both inputs and outputs have declined virtually across the board. It is important to note that these declines do not imply a decline in either efficiency or productivity. Given the changes in prices and in risk that accompanies the government withdrawal from the sector, it is rational that farmers in lower productivity areas devote fewer resources to agriculture, other things equal. However this does imply that production and income from agriculture have declined in these communities, which is not consistent with the goals of the agricultural reforms. Credit for agricultural production comes now from government support programs and from the informal market. Given the small loan sizes, the high risks and administrative costs of doing business outside the community, it is clear that the formal credit market would not well serve producers from these communities.

The percentage of total income from agriculture also fell in both communities between 1984 and 1996. The fall was much more dramatic in Alcalde y Bateas, where it dropped from 55 to 18 percent. Wage income, mostly from doing agricultural labor on nearby irrigated farms, and migration are now the largest sources of income. The decline in agricultural income in Derramaderos was not as significant as in Alcalde y Bateas because agricultural income made up a relatively smaller percentage of total income in 1984. Migration and remittance income account for fully half of all income in Derramaderos. The community is supported by money earned elsewhere, a pattern seems quite stable, not having changed since 1984. The migration pattern here is distinct from the that of Quebrantadero in that in Derramaderos migration income is for consumption and there it was for investment. Derramaderos, in spite of its lower productivity in terms of agriculture, likely plays a role in a broader household economic strategy that involves exporting labor but maintaining many aspects of family life in Derramaderos, where costs and risks are perceived to be low.

In conclusion, in the absence of major improvements in productivity or in infrastructure, this pattern of low productivity, migration dependent economic activity is unlikely to change. The 1992 reforms appear to have little to offer these communities. Alcalde y Bateas does have the possibility of getting irrigation for at least some of its land. Internal conflicts have prevented

the project from being complete to date. Agricultural production may continue in Derramaderos despite of its low productivity since within the rationality of the migration-based economic strategy, it makes sense and can be supported within the households overall financial and risk parameters.

## 5. Summary, Conclusions and Policy Implications

The empirical evidence presented in this paper on the demand for credit by *ejido* farmers suggests that the reform by itself is unlikely to have a significant impact on farmers' production decisions. Evidence from the PROCEDE participation does not find evidence of a relationship between collateralizable assets and participation in the land titling program, suggesting a lack of interest among farmers in increasing the collateral value of their land. The farmers themselves do not appear to see a connection between the reform program, access to credit, and their own desire for production credit. This suggests that under the particular economic circumstances, bank credit is not a viable option for getting access to capital. Taken together these results suggest that without complementary policies, the desired response in terms of increased investment and output in agriculture is unlikely to materialize. This is an important conclusion not only for Mexico but for the many other countries considering or pursuing policies of privatization to stimulate their agricultural sectors.

One possible policy option would be to more closely link the governments economic goals with respect to agriculture to its social goals with respect to supporting rural communities. Current policies such as *Crédito a la Palabra* and PROCAMPO encourage production, but give no encouragement or support for seeking production strategies that might be more sustainable and profitable in the long run. Similar levels of support could be tied to crop diversification, investments in land conservation, or even in experimentation to help the agricultural research system better serve such communities (Myhre).

Given the basic low productivity in much of *ejido* agriculture, without improvements in the available technology it simply will not be cost effective for many small farmers to continue investing in agriculture. This implies an important role for research and development of new technologies. One of the lessons from this study is that there may well be credit available to *ejidatarios*, but given the productivity and risk parameters of their agricultural operations, it is

simply not viable for them to produce with credit. This implies that a better technology would not necessarily have to be very low cost in order to be adopted. It would simply have to work well and reliably.

Finally, there is evidence that strengthening the rural credit system could bring benefits to rural communities. Currently such markets are active but highly segmented, meaning that capital is unlikely to be allocated efficiently at the local or regional levels (Johnson, 1997). Recently a great deal of attention has been given to the role of regional savings and loan in local capital mobilization (Adams and Fritchett, Stiglitz, Myhre). This is especially true in the case of Mexico, where the importance of migration and remittance income mean that a significant number of people have savings accounts. Lack of alternative investment or lending opportunities on the segmented informal markets often means that saving in a bank is the best option. Given the fact that many local people do not borrow from banks the money does not find its way back to the region.

Formation of regional savings and loan associations could help alleviate this problem, though care must be taken in their design not to lose the personal and social connections among members that are vital to make informal credit work. A better financial system does not change the fact that productivity is low in agriculture. Lower interest rates on informal loans may make a marginal difference in agricultural investment, but in this case the benefits are likely to be felt in other ways. Savings and lending opportunities would be valuable to those with a little capital accumulated, and at the same time support the more productive farmers who are borrowing money to plant.

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Table 1

**Importance of Access to Commercial Credit Markets**

**Value<sup>1</sup> and Percentage of Bank Credit for Agricultural by Source**

<b>YEAR</b>	<b>Banrural</b>	<b>Other Official Credit</b>	<b>Commercial Banks</b>	<b>Total</b>
1988	3978 (28.8%)	5437 (39.3%)	4413 (31.9)	13,828 (100%)
1990	2118 (10.5%)	8878 (44.1 %)	9130 (45.4%)	20,127 (100%)
1992	1854 (8.2%)	8979 (39.6%)	11860 (52.3%)	22693 (100%)

Source: Myhre, 1996

In thousands of millions of 1988 pesos.

Table 2

**Characteristics of the Study *Ejid*os, 1996**

	Alcalde/Bateas, Michoacán	Derramaderos, Sa n Luís Potosí	Porvenir, Tamualipas	Quebrantadero, Morelos
Area (hec)	3,000	2,500	2,500	2,422
Pct. Arable	50	34	64	84
Population	800	665	700	3,000
# ejidatarios	143	155	84	291
Land Owned	12 hec.	5 hec.	24 hec.	5 hec.
Irr. Land Owned	0	0	15 hec.	2 hec.
Av. Educ	2 years	4 years	4 years	6 years
Pct Maize	32	67	94	33
Pct Sorghum	47	33	0	33
PROCEDE?	No	In process	No	Yes

Table 3

**Costos De Produccion De Maiz**

(en US\$1985), 1983 and 1996

	Guia del Porvenir, Tamps	
<b>MAIZ</b>	1983	1996
Gastos/(hec)	55	192
Precio/ton	143	78
Rend. (ton/hec)	1.1	3.7
Ganancias/hec	104	96

Table 4

**Agricultural Credit by Source in the Study *Ejid*os (in pct), 1996**

	Porvenir, Tamps.	
<b>Source</b>	<b>1984</b>	<b>1996</b>
Government	100	31
Bank	0	62
Individuals	0	8
Other	0	0
Total	100	100

Table 5

**Sources of Income in Porvenir, Tamps (in pct), 1984 and 1996**

	1984	1996
Agriculture	69	29
Wages	15	22
Remittance/migration	4	13
Other	16	36

Table 6

**Costos De Produccion De Sorgo Y Cebolla  
(en US\$1985), 1984 and 1996**

	Quebrantadero, Morelos	
	1984	1996
<b>SORGO</b>		
Gastos/hec	114	144
Precio/ton	77	73
Rend. (ton/hec)	2.5	2.9
Ganancias/hec	79	67
<b>CEBOLLA</b>		
Gastos/hec		702
Precio/ton		85
Rend. (ton/hec)		16
Ganancias/hec		734

Table 7

**Agricultural Credit by Source in Quebrantadero Table (in pct), 1996**

	Quebrantadero, Mor.			
<b>Source</b>	<b>1984</b>	<b>1996</b>		
Government	72	43		
Bank	3	11		
Individuals	11	20		
Other	14	26		
Total	100	100		

Table 8

**Sources of Income in Quebrantadero, Mor. (in pct), 1984 and 1996**

	1984	1996
Agriculture	58	25
Wages	15	42
Remittance/migration	3	14
Other	24	19
Total	100	100

Table 9

**Costos De Produccion De Maiz Y Sorgo**

(en US\$1985), 1984 and 1996

	Alcalde y Bateas, Michoacán		Derramaderos, S.L.P.	
	1984	1996	1984	1996
<b>MAIZ</b>				
Gastos de Prod.	73	74	65	47
Precio/ton.	123	82	123	63
Ren. (ton/hect)	1	.9	.6	.21
Ganancias/hect	50	29	8	-31
<b>SORGO</b>	1984	1996	1984	1996
Gastos de Prod.	191	112	54	43
Precio/ton.	58	60	58	100
Rend (ton/hect)	2	1.5	1.6	.51
Ganancias/hect	-74	-21	39	1



Table 10

**Agricultural Credit by Source in the Study *Ejid*os (in pct), 1996**

Source	Alcalde y Bateas, Mich.		Derramaderos, SLP	
	1984	1996	1984	1996
Government	85	50	88	42
Bank	5	0	8	0
Individuals	0	38	0	42
Other	10	12	4	12
Total	100	100	100	100

Table 11

**Sources of Income in Alcalde y Bateas and Derramaderos,  
(in percent), 1984 and 1996**

Source	Alcalde y Bateas		Derramaderos	
	1984	1996	1984	1996
Agriculture	55	18	18	6
Wages	21	37	5	14
Remittance/migration	8	25	50	50
Other	16	20	27	30