CHAPTER 9. MILK COLLECTION CENTERS IN THE SOUTH

In this chapter I describe four more EACs which own and operate Milk Collection Centers (CALs). These differ from the two analyzed in the previous chapter in that they work directly with the large dairy industries, rather than small independent cheese producers. The four CALs discussed in this chapter are located in Region X, in the southern part of Chile, about 1000 km from the capital city, Santiago.

9.1 The context

Region X is Chile's most important dairy region, producing two-thirds of the dairy industry's milk in the year 2000. The region's agroecological advantage lies in its climate and pasture; while the national average for head of cattle per hectare is 0.7, in Region X dairy farms have an average of 1.2 heads/hectare.

Region X has many small dairy farms, with 77% of all farms producing less than 50,000 lt per year. This contrasts with the Metropolitan Region (where CALs Ranchillo and Lo Ovalle are located), where only 14% of the dairy farms produce less than 50,000 lt/year. Region X's small farms support an average of around 25 head of cattle, and yields per cow of around 1,000 lt, four to six times lower than the yields of larger farms with 100 or more cows.

It is estimated that nationally 38% of the small milk producers (i.e., those that produce less than 100,000 lt/year) are associated with CALs, and that these organizations produce around 65% of the milk supplied by small farmers to the dairy industry, or about 9% of the total national milk production (Universidad Austral, 1999).

The dairy industry is undergoing rapid and deep changes in the following areas[39]:

- *Demand and production:* Due to the growth in the population's real per capita income, consumer demand for dairy products grew annually by almost 7% between 1986 and 1998. In the 10 years to 1998, milk production in Chile doubled. Production is increasing in Region X by 55 million liters/year, as compared to 12 million liters/year or less in the other regions. Today, demand and supply are more or less in balance (IFCN, 2000).
- *Prices:* As supply has grown faster than apparent demand, average prices dropped sharply from a high of around $ 0.30/lt in 1989, to a low in 1998 of $ 0.20/lt. With these prices, many small farmers claim that their production costs are actually higher than the market price of their milk. These prices are the 'basic price', supplemented by a number of important bonuses: for higher production during the winter months, fat and protein content, total annual volume, cooling milk on the farm, and sanitary quality. These bonuses are so important that a large producer who meets the highest standards can easily expect a final price 90% higher than the basic price, while the final price received by many small farmers can be as low as only 5% to 10% above the basic price. In the late 1980s and early 1990s, these bonuses aimed primarily at increasing milk production. Many CALs were created precisely to take advantage of the premium price being paid to large suppliers: by delivering their milk together and thus appearing before the dairy industry as a single supplier, a large number of very small producers could actually capture the higher price paid to larger farmers. However, since the mid-1990s the emphasis has clearly shifted to improving milk quality and seasonal stability of production.

[39] This section is based of official statistics provided by the Office of Agricultural Studies and Policies (ODEPA) of the Ministry of Agriculture, as well as on information kindly provided by Mr. Víctor Esnaola, also of ODEPA. Most of this information is available online at http://www.odepa.gob.cl

- *Yields:* Due to the large number of farms producing milk for household use and informal markets, average yields in Chile are low. Annual production per cow ranges between 1,200 lt for small producers, to 6,500 lt for large farms. Most observers agree that yields have tended to increase significantly over the past decade, due mainly to the growing importance of improved and seeded pastures as opposed to natural pastures; the area under the former increased by 20% in the eight years leading to 1997.
- *Seasonal fluctuations in production:* In order to stabilize production throughout the year, the milk industry has paid significant bonuses to farmers who can improve the ratio of winter to spring production. The result of these bonuses has been a decrease in production in the peak spring month (December, in the southern hemisphere) by 20%, with an increase in the lowest winter month (July) of 27%, thus leading to a more stable supply of milk throughout the year. To stabilize production, a diary farmer has to make substantial investments to improve feed supply during the winter months, and also to improve the genetic quality of his or her herd. Stabilizing production is seen by most small farmers as a very difficult objective to achieve.
- *Number of milk producers:* There are around 13,500 milk producers in Chile, of which 82% produce less than 100,000 lt per year. The number of producers who supply milk to the dairy industry has decreased significantly over the past five years, in particular among the small producer group, which has lost at least 25% of its members (Universidad Austral, 1999).
- *Herd size:* Given that many of the bonuses are directly or indirectly linked to scale of production, there has been a significant increase in the average size of dairy herds. In 1997, the average herd size nationally was 25 head of cattle per farm, and for Region X it was 35. The annual rate of growth of herd size between 1990 and 1997 was 5% nationally. With less than 30 head of cattle, a small farmer in Region X is likely to produce less than 50,000 lt of milk per year.
- *Markets:* The medium and large dairy firms buy and process 75% of all milk produced in the country, most of the rest going to the informal market. The share of total milk production processed by the dairy industry is increasing at a rate of about 1.5% per year. Although Chile is a net importer of milk and dairy products, increased production and quality have allowed the country to start exporting certain kinds of dairy products (mainly dry milk) to other Latin American countries; exports have grown by more than 25% per year.
- *Market concentration:* The milk market in Chile is highly and increasingly concentrated. According to Vargas and Foster (2000), in 1998 the largest dairy firm controlled 28% of the market, while the largest four firms together had a market share of 80%. Six years earlier, the top four firms controlled 'only' 62% of the market.

In summary, CALs in Region X are operating in a rapidly changing and demanding context, where the viability of small-scale milk production is being put to the test by the market trends described above.

Table 9.1 shows the evolution of some key statistics for the CALs in Region X and nationally[40]. The most important trends are:

- CALs in Region X have always been larger than those in other regions, both in terms of number of suppliers and volume of milk processed;
- there was a period of CAL expansion until 1997, followed by a decrease after the price of milk started dropping and the standards of the industry became more stringent;
- after 1997, many CALs outside Region X were unable to sustain themselves and had to close down or merge with other CALs, but CALs in Region X did not decrease in number;
- after prices started to drop and until 1999, the number of suppliers per CAL dropped significantly (by 30% nationally and in Region X), meaning that a large number of small farmers were unable

[40] Personal communication, Mr. Carlos Cristi and Mr. Juan Burrows, both of INDAP, April, 2001.

to continue producing milk for the formal market;

- as a consequence of the fall in the number of suppliers (and perhaps also in the total production per supplier), the volume of milk processed by the CALs also dropped between 1997 and 1999, by about 30% nationally and by 40% in Region X;
- however, after prices improved in the year 2000, the number of suppliers and the total volume of milk processed recovered, although the peak levels of 1997 have still not been fully regained.

Table 9.1 Evolution of CALs, suppliers and output

Year	National					Region X				
	No. of CALs	No. of CAL suppliers	Liters of milk processed x 10^6	Supplier per CAL	Liters of milk processed per CAL x 10^3	No. of CALs	No. of CAL suppliers	Liters of milk processed x 10^6	Supplier per CAL	Liters of milk processed per CAL x 10^3
2000	n.a.	n.a.	n.a.	n.a.	n.a.	68	4588	59	67	868
1999	135	4736	74	35	548	69	3797	48	55	696
1998	154	5932	104	39	675	70	4440	75	63	1071
1997	137	6776	106	50	774	69	5278	82	77	1188
1994	84	5000	98	60	1167	51	3810	42	75	824

Until 1998 or so, the CALs' main objective was to increase total production, as the industry was paying premium prices for volume. By 1997-98 the industry started signaling that this period was coming to an end. This was because supply had caught up with demand, and favorable exchange rates were making it more and more convenient for the industry to import milk instead of buying it domestically. The industry now began to concentrate on improving milk quality and stabilizing year-round production. Despite having advance warning, most CALs did not react to these signals until the industry actually changed its pricing structures to reflect its new priorities.By early 1999, it became apparent that most CALs in Region X were not adjusting rapidly enough to the new market conditions, and that this was a major threat to their survival. INDAP in Region X launched a special Program to Improve the Sanitary Quality of Milk in Milk Collection Centers. The plan included a number of measures at the farm and CAL levels, all designed to help small farmers and their organizations adapt to the new market conditions. These included on-farm investments to improve milking shed hygiene, intensive monitoring of the performance of each CAL, and linking subsidized payments to the private advisory firms who work with the CALs to the performance of the organizations they work with.

According to Jofré and Monje (2001),[41] after 18 months this special program had substantially improved the quality of milk produced by many of the CALs. In July-August 1999, only 32% of CALs were achieving the top standard of the indicator measuring bacterial counts, while by the end of 2000, 56% were doing so. By this time the average bacterial count for all CALs in Region X had decreased by 84%. The second key indicator of milk quality is somatic cell counts. In 1999 only 28% of CALs achieved the top industry standard for this indicator; this had increased to 73% by the end of the year 2000. The average somatic cell count for all CALs in Region X decreased by 32% in the 18-month period analyzed by Jofré and Monje. These major improvements mean that many more small farmers are now capturing the bonuses linked to the top milk quality standards.

[41] Who based their reports on official information provided by the dairy industry.

9.2 The case studies

9.2.1 Agrícola y Comercial Coyam S.A

Agrícola y Comercial Coyam S.A (CAL Coyam) was founded in 1996 by 44 small farmers from Maullín municipality, Region X.

A brief history

In 1990 20 small farmers got together to form an APPA (Asociación de Pequeños Productores Agropecuarios). These APPAs had been promoted in Region X by INDAP as a sort of first-step formal organization, since obtaining legal recognition for an APPA was quick and cheap.

Using their APPA as an organizational platform, the 20 members began to collect their milk and sell it to Nestlé. This milk was not pre-cooled, and was delivered to a collection point in individual milk bins by each farmer. Soon, the farmers started to feel that Nestlé was not being fair in its deals: according to them, with certain regularity Nestlé would acknowledge receiving less milk than the amount the farmers claimed, and, more importantly, a significant share of the milk would go off since it had not been pre-cooled, the truck was not refrigerated, and the Nestlé plant was a long way from the farms. An additional complication was that the APPA could not legally engage in for-profit or commercial activities. Thus, each farmer had to invoice Nestlé individually.

By 1994, the 20 APPA members recognized that they needed to change the way things were going. INDAP had told them about the Milk Collection Centers (CALs), and they thought that this type of organization would serve their purposes very well. As they were forming a new CAL, the dairy industry's price policies began to favor higher production and supply volumes. The farmers realized that to capture these price incentives, and also to justify the investment in a CAL, they needed to invite other local farmers to join. Around 20 or so new members joined, many of whom were very small farmers with only a handful of cattle each, who produced milk in the spring and summer months but not during the winter. As we will see later, although this decision made sense given the market signals at the time, it would create major problems for the CAL in the future.

A key decision by the original APPA members was to invite not only small farmers to join the new CAL, but also their 'large' neighbors (actually medium-size traditional dairy farms, but larger than the APPA member farms, and large enough to disqualify them from INDAP programs, although far from being large-scale or high-tech enterprises). The idea was that joining forces with them would help the CAL achieve two goals: (1) increase the amount of milk and, thus, capture the price premium being paid by the diary firms, and, (2) spread the fixed costs of the CAL among a larger number of farmers. Only one 'large' farmer accepted the invitation, and he almost immediately took effective leadership of the organization, largely due to his capacity to interact with INDAP and the milk processing firms. As one of the members put it, *"before, they would never receive us when we needed to talk to them, but this changed.... the family name is important!"* This commercial farmer eventually also became the President of the Association of Milk Collection Centers, and as such became an important political counterpart of INDAP.

Sourcing clients

In March 1995 the Milk Collection Center started operating, still under the legal form of the APPA. FOSIS subsidized most of the building costs, INDAP paid for the legal services needed to constitute a new organization[42], and the farmers received agricultural and veterinary advice, also funded by INDAP.

At first, the farmers tried to negotiate a contract with Nestlé, but in the end they preferred to reach an

[42] The new legal status was obtained in 1996.

agreement with SOPROLE, the largest dairy agribusiness in Chile[43]. SOPROLE provided – for free - the cooling tank and the necessary bins to deliver the milk from each farm to the CAL, while also offering to pay a better price for milk than Nestlé. In 1999, SOPROLE notified the CAL that it was interested in selling the cooling tank to the organization; this was interpreted by some of the farmers I interviewed as a sign that the firm was probably thinking of dropping CAL Coyam as a milk supplier. Other sources explained that this was a new general policy of most of the milk-processing agribusinesses, reflecting the shift from a priority in 'capturing' as many suppliers as possible in the early1990s, when there was a gap between supply and demand, to the new emphasis on fewer but larger suppliers capable of delivering high quality milk throughout the year.

SOPROLE was initially more open and helpful than Nestlé, but with time this began to change. As one farmer put it, *"before they (SOPROLE) would listen to us, but not anymore. Now they just go ahead and change the rules, and they simply inform us one month in advance, and we just have to follow whatever they say"*.

Changing buyers brought new challenges. When the CAL started operating, Nestlé immediately opened two collection centers at both ends of CAL Coyam's area of influence and began paying significantly better prices. However, none of the 44 members left the organization because they were told by their advisors that Nestlé was closing down some of their collection centers, and they felt that if they deserted the CAL, they could well end up with neither the Nestlé nor the SOPROLE contracts.[44]

Since 1996, the organization has started other projects with INDAP's support. Through the National Contests for the Modernization of Small Scale Agriculture and BOGAN[45], INDAP has funded (through loans and grants) two trucks for milk collection, an artificial insemination laboratory, an extension to the CAL's premises, a machine to wash the milk delivery bins, and the infrastructure required to comply with environmental regulations prohibiting dumping of liquid industrial residues. INDAP also supported the investments to start a new line of business: potato seed production, which, however, failed after the second year. According to information provided by the local INDAP office, between 1995 and 1999, CAL Coyam received 10 loans for a total of $ 35,000. During the same period, the organization also received $ 122,000 in grants, of which 72% was linked to a special program to support the restoration of degraded soils on members' farms.

In one of my meetings with the grassroots members, it was acknowledged that INDAP's strong support for this CAL was mainly due to the influence and initiative of its commercial farmer leader. An interesting fact is that the CAL Administrator – hired by the organization - did not know how much money had been invested or how much they owed to INDAP because of the loans involved in all these projects.

Performance analysis

The CAL's total production increased rapidly from 462,000 liters in 1995 to 1.2 million liters in 1998 and 1999. However, total income has not shown the same trend, since the price received by farmers dropped from $ 0.2/lt in 1996, to about $ 0.13/lt by the end of 1999. This does not include the $ 0.016/lt fee charged by the CAL for its services and to help pay the outstanding loans from INDAP; this fee represented 8% and 13% of the market price in 1996 and 1999, respectively. While the fee generates only just enough income to cover the CAL's operational costs, it is not enough to cover its debt repayments. For this reason, the CAL has had to reschedule its payments a number of times, and at the time of my field research, it had its credit suspended because it had not been able to meet payments.

---

[43] At the time of revising this chapter, Nestlé and SOPROLE announced a strategic alliance that will give them direct control over half of the milk market in Chile.

[44] Nestlé later closed down one of the collection centers, and turned over the second one to another EAC.

[45] BOGAN is an INDAP program that combines grants and loans to support fixed capital investments directly related to animal production (milk and/or meat).

In addition, most of the CAL members have not registered individually as tax payers; this means that the CAL must retain the Value Added Tax (18%), which in November 1999 represented an additional loss of $ 0.02/lt[46]. Including all these factors, the final price that an average CAL member received in November 1999 was $ 0.09/lt, equivalent to 44% of the price he or she got four years earlier. In my interviews, all the members agreed that with the current prices, there is no incentive to increase milk production further.

The low price being paid in 1999 reflects the market trend, but is sharply aggravated by the failure of CAL Coyam and its members to stabilize production year-round and to improve the quality of their milk. For example, with SOPROLE's pricing policy, in November 1999 CAL Coyam should have received $ 0.19/lt, but in fact lost $ 0.06/lt (31% of the basic price) due to the low quality of its milk and the very high differences in production between the spring and the winter seasons.

Why has the organization been unable to improve its performance in all these years? There are two clear reasons:

Welfare versus profits

Firstly, around half the total membership comprises very small farmers, known as '*temporeros*'.[47] These farmers maintain old and low quality cattle, and lack improved pastures for winter feeding. They lack the land and other resources to make the investments required to improve their situation. In order to improve the overall winter to spring ratio of milk production, the CAL would have to stop receiving the milk of these very small members during the spring and summer months. During the interviews, many of the members explained to me that this move was strongly opposed by the commercial farmer who leads the organization, despite the fact that many of the members were in favor. Several of the larger members also said they were unwilling to exclude the *temporeros*, since these were their friends and neighbors; as one of them put it using a Chilean expression: *"we have the heart of a grandmother"*.

Thus, a membership policy that made sense in one particular market context has now turned against the organization as a whole and, in particular, against the many members who could adjust to the new market conditions. This is another example of the permanent tension between seeking results at the level of the EAC, and prioritizing the welfare of members as individual farmers. The heterogeneous nature of the membership reduces the CAL's options for responding to shifting market signals: if the CAL adjusts to meet the new market demands, it will hurt its smaller members; if it does not adjust, it will hurt the 'larger' farmers.

What is surprising is that the commercial farmer who holds the key to a change in CAL policy, opposes the alternative that would directly favor him, since he is the largest of all the members. When confronted with this discrepancy, some of the members lacked an explanation, while others said that their leader was a good man willing to make sacrifices for those who are much poorer. While one cannot discard this explanation offhand, the obvious contradiction leaves open the possibility that the commercial farmer is deriving other benefits from his participation in this organization, ones that I could not identify, aside from the fact that he has become a well-known farmer leader in the region.

Over-riding market signals

There is a second reason for the CAL's inability to improve its performance over the years. As I explained earlier, the dairy industry's pricing policy combines a basic price and a number of direct, transparent and explicit price incentives or bonuses linked to milk quality, seasonality, and so on. Farmers who meet the grades and standards of the industry receive a significantly higher price than those who don't. INDAP's policy, shared by almost all CALs, is that each organization should transfer these market signals to the individual members, as an indispensable move if small-scale milk

[46] Once a year, after the CAL pays its taxes, the farmers recover most of the VAT they paid on each liter of milk.

[47] Seasonal producers who produce milk only during the spring and summer months.

producers are to remain in the market. To transfer these market signals to the individual members, a CAL has to monitor each member's performance against the different pricing variables. This is not difficult to do: the CAL knows the amount of milk delivered daily by each farmer, and once or twice a month each member's milk is sampled and analyzed for quality. With this information, it would be a simple matter for the CAL to calculate the price per liter paid monthly to each member. This is the way most CALs work, but not CAL Coyam.

CAL Coyam's agricultural advisory consultant firm is contracted to receive the information from SOPROLE as well as from the individual laboratory analyses, and to calculate the price per liter per member. With the backing of the commercial farmer, the consultants' policy is to subtract from the price that should be paid to the better performing members, to increase the amount due to those who are below average. When I interviewed the advisor, he told me that *"if we applied the industry rules, some of the members would be receiving less than Chilean $ 0.04/lt, and others would be getting close to Chilean $ 0.19/lt or more. Those that receive the lower price and have only one or two cows would not survive. We prefer to regulate their money."* The advisor also explained that instead of relying on prices to reward good farming, they analyzed the results of each individual and visited those who were not performing well to explain what technical changes they should introduce to improve things. Part of the reason for this, they said, was that they felt that the data provided by SOPROLE was fudged and did not reflect the real performance of the farmers; in their view, firms such as SOPROLE are out to get the small farmers, to drive them out of business, and they saw that it was their duty as advisors to counter that policy by assuring *"solidarity among the members of the organization"*. Finally, the advisors told me that this policy was supported by the members, a fact that all the members I interviewed strongly denied.

The results of this policy are very clear. According to a report from the INDAP regional office which analyzes the quality of the milk produced by all the CAL in Region X in July-September 1999, CAL Coyám had some of the worst results. In fact, its milk was twice as bad as the average quality of 64 CALs in Region X, and around four times worse than that of the other three CALs that I have included as case studies[48].

I asked the staff of the local INDAP office what they thought of this practice. They were surprised by this information, and told me they did not know this was going on. However, they said that it was not up to a government agency to intervene in how a CAL runs its affairs. The head of the local office stated: *"Our task is to define a policy in favor of these technological changes, and to provide the services and resources for farmers and their organizations to be able to adjust to market demands. If and how they do it is not an area for government intervention"*.

In meetings without the commercial farmer leader I asked the rest of the CAL board members and a group of six grassroots members what they thought about this policy. The board members said they were conscious that the price differential between the best- and worse-performing members was never greater than around $ 0.01/lt. They knew that this was contributing to very poor results both in terms of quality and seasonality. Yet, despite the fact that many members complained in private, the issue had never been formally raised in one of the monthly meetings because discussing it was more likely to lead to open conflict than to reach a satisfactory agreement. They said that it was the advisory firm who defined the issues to be discussed at the monthly meetings, and that *"they are the referees"*. In short, the board members are aware of the negative implications of the pricing policy but feel powerless to change it or even discuss it openly.

The grassroots members made additional comments. First, they were fully aware of the differential performance of the members, since in the monthly meetings the advisory firm informs them of the total results, and then details the information for each member. *"The problem is that we took the decision that if a member delivered low quality milk for a third time, he or she would be suspended for at least 15 days... but this rule had never been enforced. We all discuss this during the meetings, but*

[48] The indicators for the other three case studies placed them around two times better than the average for the 64 CALs for which I have information.

no one dares to say 'let's cut this or that person' because we do not want to have a problem with our neighbors... besides, if we cut one person, we lose the $0.016/lt fee and we can't afford this."

The grassroots members also explained that at first there were no individualized laboratory analyses provided, so they decided to pay an average price because they did not know who should be rewarded or punished. But, *"we also decided to start doing the individual lab analyses... this has been going on for many months, but nothing changes"*. They also claimed that they have never received detailed information about how the individual prices are set for each member, they are only told their final monthly price. Not one of the grassroots members I interviewed knew if or by how much his or her price had been adjusted. But several of them loudly agreed when one said: *"we are making an effort in vain"*. When pressed on the issue of why they did not force an open discussion of this problem if they felt they were being hurt, they finally said that the commercial farmer leader is the one who *"cuts the cake"*. They went on to give me a number of concrete examples of when the majority had been in favor of X decision and the commercial farmer had said that in that case he would resign and leave the organization: *"we could not survive without him"*.

9.2.2 Cooperativa Campesina El Arrayán Ltda

The second CAL in this group of case studies is the Cooperativa Campesina El Arrayán Ltda. (El Arrayán Peasant Cooperative Ltd.). It was founded in 1995. It has 74 members, of which about 10 are inactive and do not deliver milk; however, there are five milk suppliers who are not members of this CAL.

A brief history

This group of farmers lives 70 km from the nearest milk processing plant. For many years, a truck from the dairy firm would pick up their milk but it took so long to deliver it that much of the milk would become sour and lose its value.

The small farmers in the area had been supported by an NGO linked to the Catholic Church, as well as receiving advice from one of the private advisory firms contracted by INDAP. In 1990, the NGO invited some of them to attend a workshop organized by the Universidad Austral, a regional university that had played a pioneering role in promoting the formation of Milk Collection Centers. At once, they became enthusiastic about the idea and began talking with the dairy firm SOPROLE, in a process that extended over three years.

A core group of five or six persons kept the process going throughout this period. This group invited all of the 150 or so small farmers in the area to join, 45 of whom responded favorably. When the talks with SOPROLE stalled, only nine farmers remained interested. When an agreement was finally reached with SOPROLE, the number again grew until the cooperative reached its present membership of 74 small farmers. *"The doors were left open for two years after we formed the cooperative, but now are closed because we now own many things and it would not be fair for others to come and reap the benefits"*. Today, if a new member wants to join, he or she must pay a fee of $ 420 and remain a non-member supplier for three months until the quality of his/her milk can be ascertained.

The legal process to establish a business was started simultaneously with the negotiations with SOPROLE. INDAP paid for a lawyer who explained to them the advantages and disadvantages of several legal alternatives, until they decided in favor of a cooperative (*"because it is easier for a person to join or leave, compared to a Limited Liability firm, and it has tax advantages, compared to a Corporation"*). The cooperative was registered in September 1994, but the Milk Collection Center (CAL) began its operations in May 1995.

The CAL was built with a grant from FOSIS for $ 2,520, plus a loan from INDAP for $ 10,500. Although the INDAP loan was scheduled to be paid over four years, they settled it in only half that time, with each member contributing $ 158, spread over the two year period. Their cooling tank has been lent to them by SOPROLE free of charge. In 1996, after the INDAP loan was paid, they bought the land were the CAL was built.

Since starting their CAL, the organization has carried out other projects. In 1998, a severe drought year, they connected the CAL to the local school's deep water well because the CAL's much smaller well had dried up. In 1998 they also built infrastructure to process their liquid residues, so as to comply with environmental regulations. That same year they completed the CAL's buildings. The next year they built their own deep well, and the organization is now setting up a distribution system to sell drinking water to local houses. Also in 1999, they bought a feedmill to process feed for their cattle. They also have a small store where they sell veterinary supplies and other goods that are in constant demand (*"we have a profit of 6% which is not high, but we do this as a service to the members who can save the cost of traveling to town to buy these products"*).

At the start of each season, the members of the cooperative each state the annual loan they will require from INDAP. The organization negotiates the loan, but each member is responsible for his or her own debt. In the spring of 1999, the organization obtained a loan of $ 42,000 for this purpose. The cooperative also negotiates collectively to purchase fertilizers and other agricultural inputs needed by the members. While the prices they obtain are not much lower, they do get some important benefits, such as free delivery to the CAL and up to three months to pay.

The organization has also negotiated access to some of INDAP's programs on behalf of its members. For example, in order to improve milk quality the cooperative has obtained grants and loans so that 76% of the members could have cement floors and clean pressurized water in their milking sheds.

Another important achievement is that they now exert greater control over the technical advisory services provided by a private firm under contract to INDAP. They even fired the old firm due to the bad quality of their services. They invited three new firms to present a work plan to the members, who voted to select one. At the same meeting, the members elected a commission to supervise and control the advisors' work. An annual fee of $ 67 is paid by each member to the advisory firm, the proportional amount being discounted monthly from the milk payments.

These investments have been paid for by cash and in kind contributions from members, as well as through additional loans and grants from INDAP and from the municipal government. The organization has had a consistent policy of keeping their debts at a low level, and has also ensured that members' contributions are set at a level that is acceptable to the poorer households.

Organizational structure

The CAL's organizational structure is as defined by law. Since its foundation, the cooperative has held three board elections. The original president was replaced at the second election, but was elected again the last time.

Once a year, an external accountant comes to a general meeting to present and explain the cooperative's balance sheet and income statement. An elected Accounts Revision Committee liaises throughout the year with the external accountant and with the board, and informs the membership during their periodic meetings.

The board meets up to four times per month, and the General Assembly meets every two months, but it holds extraordinary meetings to discuss any major decision, such as taking out a loan. Around 45 to 50 members participate in each membership meeting, and those who do not attend are fined $ 4.2. If a board member does not attend the board meetings, the fine is $ 6.3. The fines are always applied and paid, with no exceptions.

The internal bylaws have been adapted over time, according to need and experience. The members I interviewed felt the most important rules are those governing the election of the board, the obligation to participate in meetings and other activities, and the pricing system that considers the same variables as those of the milk industry. The rules are harsh; for example, if a member is caught diluting his/her milk, the first time the payment is cut by 50%, and a warning is issued; the second time the member is suspended for 10 days (meaning he/she cannot sell milk for that period); the third time the member is

suspended for life. Most of those who are fined do not come back: *"In 1999 two left because of this, but it is better, since they were the ones with the lowest quality."*

Pricing incentives

When asked about positive and negative price incentives to stabilize production and ensure milk quality, the members reply with what has obviously become the organization's slogan: *"The organization does not reward or punish; each member rewards or punishes him or herself alone"*. The CAL analyses the milk quality for each member, and keeps data on other variables of individual performance. Since they do not trust the quality analysis done at SOPROLE's laboratory (*"the plant is a dictatorship"*), they have hired an independent private lab to do a separate test for the cooperative, which they use to set the final price each member receives every month. In December 1999, for example, the average price was $ 12/lt, but the best-performing member obtained $ 18/lt while some got only $ 0.06/lt. The results are printed each month and a copy is delivered to each member, so everyone knows who is below or above average in each indicator, and each person has a clear and detailed explanation of how his/her monthly prices were calculated.

This system of individualizing price incentives has allowed the organization to make significant progress in overcoming some of the most important technological problems of milk production in Chile. In 1996, the CAL had a 6:1 relationship between milk produced in the spring and summer months versus winter production, and the ratio had been cut by half in 1999. Milk quality has also improved significantly over time, to the point where the different indicators are comparable to those of a farmer selected by Nestlé as an example to be followed by others (Nestlé Chile S.A., 1999).

Farm level performance constraints

While progress has been made in adjusting to the industry standards, this has been distributed unevenly: in 1999 around 70% of the members had below average performance indicators, judging by the average price they received for their milk. The correlation between total production (indicative of farm and herd size) and average price is not strong enough[49] to conclude that performance is predetermined by assets: there is obviously room for improvement for most, if not all, CAL members.

Despite the progress shown by the CAL as a whole, the low price of milk is hurting this CAL and its members, to the point where total milk processed by the CAL has been decreasing steadily since a high of 1.23 million liters in 1997, to 916,000 liters in 1999 (the CAL started with 661,460 liters in its first full year, 1995). Many farmers stopped selling their afternoon milk production because of the low price (*"given the price paid by SOPROLE, it is more profitable to use the afternoon milk to raise calves and perhaps make a bit of cheese"*).

According to the owner of the advisory firm that works with CAL Arrayán, lower production does not only reflect decreasing prices, but also the influence of a severe three-year drought that damaged pastures severely, as well as the pressure being put by the organization on members with low quality standards to leave the cooperative.

Due to the lower levels of production, the cooperative had to increase its service fee to its members for each liter of milk processed and sold from Chilean $ 0.014/lt in 1995, to Chilean $ 0.021/lt in November 1999. Taking into account average milk prices at the time, the fee has increased from representing around 7% of the price, to 23%.

This situation is beginning to create some tension among the members. One of them told me: *"This is something I don't think is fair. Now that things are not going well, there are many who are not delivering the afternoon milk, so there are fewer of us pushing the cart of the cooperative. Once things improve, they will come back and continue to benefit. Besides, the organization is also supporting those who cut back on the milk delivery, to get loans and subsidies from INDAP... they remain in the organization only because it helps them to get loans."*

[49] The correlation coefficient between price and production is 25%.

When asked if they have a plan to reverse this situation, the board members readily acknowledge that most members have not really tried to increase quality and production, especially during the winter: *"we made an attempt to introduce artificial insemination to increase winter production, but few did it, in part because they felt they did not have enough feed for winter feeding"*. On the other hand, *"many have not taken the time to register for INDAP's soil fertilization program... if you do not invest in your fields, each year you will get less and less"*.

Several members I interviewed agreed with the board members that during the good years, when the prices were high, most members invested their profits in increasing the size of their herd, but without improving their pastures. In fact, an informal survey I conducted of eight members showed that, on average, at the start of the year 2000 each of them had 12 head of cattle, compared to only three in 1990, but the growth in the acreage under improved pastures was much less significant.

In a meeting with the board they estimated that a comprehensive plan to improve winter milk production would require an investment of around $ 126,000, or about $ 1,700 per member. The main obstacle is that most members are already in debt to INDAP, so they do not have more credit.

I asked local, regional and national INDAP authorities what could be done in this type of situation, where an EAC is hampered by constraints at the farm level. They acknowledged that policies which support economic organizations emphasized investments at the organizational level. There is a disassociation between the instruments which support the EAC and those which support primary production. On the other hand, Luis Marambio, former National Director of INDAP, explained that this posed a dilemma: *"INDAP has a large number of unorganized clients. If we concentrate more resources on those who are organized, so that the support to the EAC itself is complemented with strong investments in their members' farms, it would mean that we could attend less farmers."*

The cooperative's private advisor had this to say: *"I may preach in favor of specialization, arguing in favor of investing in all that which is needed to increase winter production and improving quality. But the strategy of peasant survival has historically been one of diversification, not of intensification and specialization... besides, the dairy industry radically shifted its policy in the past decade, from volume to quality, and no one really knows where it will be ten years from now, so I could not promise them that the types of investments that I am recommending based on today's signals are the ones that will pay off in the future."*

Performance analysis

Once again we see that in times of difficulty, the ever present tension between the interests of the EAC and those of the members, becomes stronger and stronger. Despite the strong commitment and discipline of the members and the serious way in which the cooperative runs its affairs, both the organization and the individual farmers failed to adopt any of the possible strategies to cope with the problem: diversify into new business enterprises or new markets, lower administrative and fixed costs, and/or increase primary productivity at the farm level. In the absence of these pro-active changes, the organization is now dependent on support from the public sector, as well as on the capacity of its members to survive until conditions improve.

While the members despair about the decreasing prices, all of those I interviewed were unanimous in expressing their satisfaction with their organization. The most frequent reason I heard was that *"we are still selling our milk, while those who are not organized cannot find a buyer."*

9.2.3 Sociedad Agrícola y Comercial Chirre Ltda.

Sociedad Agrícola y Comercial Chirre Ltda.(CAL Chirre) was founded in 1997 in the municipality of Río Bueno, although the organization had been operating under a different legal status since 1994. This CAL has 46 members, plus an additional eight non-member suppliers.

A brief history

One of INDAP's Technology Transfer Program consultants initially promoted the idea of forming an organization of milk producers in this area. CAL Chirre's President of the Board explains: *"This person knew what was coming, that the diary plants would in the future not receive milk in individual bins; besides, this advisor also showed us a big carrot, which was the extra Chilean $ 0.05/lt being paid at that time by the dairy firms as an incentive for larger amounts of milk per supplier".* Yet, it took a lot of work to get the organization going: *"we lacked trust in the organizations".* Finally, the small farmers established an APPA (Association of Small Farmers) with about 30 initial members. This operated for three years until they formed the current organization in September 1997. They sell their milk to Loncoleche, one of the largest dairy firms in the country.

The Milk Collection Center was built in 1995, funded by an INDAP loan to be paid off by all the members over four years. In 1998 they made several investments to improve and expand their CAL, and to add the infrastructure required to comply with the liquid residue disposal regulations. In 1999 they bought a truck and built a house next to the CAL for the administrator. They have also made a considerable investment to buy milk delivery bins, and have improved a road to shorten by 15 km the route that the truck has to take to pick up the members' milk. Taking advantage of loans and grants made available through INDAP's BOGAN program, they have made improvements to members' milking sheds through the acquisition of milking machinery, cement floors, tin roofing and so on.

Organizational structure

As with CAL Arrayán, INDAP paid for a legal study to compare the advantages and disadvantages of different types of organizations. CAL Chirre chose to be a limited liability firm rather than a cooperative because it is too easy for members to leave cooperatives, and since the organization would incur debts, they were afraid that a few members would be left to pay the loans: *"as a limited liability firm, we are all tied together".*

A monthly membership meeting provides members with a detailed report on prices, production, quality standards and any other matters of importance. Attendance used to be low until they decided that milk payments would be made at the end of these meetings. The board usually meets at least twice a month, or more if necessary. All the external stakeholders I interviewed agreed that CAL Chirre's board provides excellent leadership. A well-informed INDAP professional, familiar with many CALs, explains: *"in some CALs, you see that the leadership is provided by the advisor. In other CALs, everything rests on one single person. Some CALs do not have any leadership at all and are totally dependent on INDAP. But CAL Chirre has a strong team of at least seven members who are deeply involved in managing their organization; they are very positive and forward-looking, always with clear goals and with good relations with the membership".*

This CAL charges a service fee to members of $ 0.021/lt, including debt repayments: *"we started charging $ 0.017/lt, but almost immediately saw that this was not enough, so we raised it and have kept it constant since then".* They have been able to maintain this fee because buying a truck in 1999 allowed them to lower their fixed monthly costs by 30%.

However, they have lost their two largest milk suppliers because Loncoleche financed individual cooling tanks for them: *"one of them we did not mind since he never wanted to accept our rules, but the second one has hurt us."*

In 1996 the CAL adopted rules governing milk quality and seasonality of production, but these weren't really enforced until 1998 when pressure from the dairy industry increased. In addition to the standards required by the industry, they have added their own measures to improve performance more quickly. For example, if a member fails to meet the industry sanitary quality standards for two months in a row, the CAL doubles the discount in the price of milk on top of the discount applied by their buyer Loncoleche. Rules of this sort have been agreed not only for sanitary quality, but also for fat content, milk dilution, and so on. A few members have withdrawn from the organization after being fined.

Performance analysis

The results of these rules speak for themselves: between 1998 and 1999, the CAL improved the main average indicators of milk quality by a factor of two, and improved the fertility and the quality of 188 hectares of pasture, leading to higher production during the winter months. The board feels that all their members have responded very well to this program: *"60% are doing very well, and only 10% still have quality levels that are not acceptable"* (in fact, records kept by the organization show that almost one third of the members are below average).

The board attributes their success to the combination of price incentives and well focused technical assistance to those who lag behind. In a meeting with grassroots members, they agreed when one of them explained that until the price incentives were enforced, nobody paid much attention to their technical advisors' recommendations: *"it costs money to do what they say, so unless we stand to lose money, it is more comfortable to keep working as we are used to".*

However, the members and the board feel that what they have done is not enough. For example, board members say: *"We are losing the battle to improve the winter to spring production ratio. So we analyzed this and decided several things. First, right now every member has a silo for winter feeding. Given that we now have enough feed, we have sent one of our members to receive training in artificial insemination at the Universidad Austral of Valdivia. We will shift more cattle to winter production".*

When I asked the grassroots members what they thought of this plan to increase winter production, they agreed that it was necessary. However, none of them had any idea of what the change would cost them. This lack of detailed knowledge about the economic costs and benefits of different technological options was also shared by the private advisors and the INDAP staff whom I interviewed: despite being heavily involved in promoting certain practices or discouraging others, none was able to tell me the actual costs or expected benefits, for example, of improving milk quality versus seasonal stability of production. The head of the local INDAP office explains: *"to have access to the market, you need quality, that is the key that opens or closes the door. Once you are in, then we should be doing a finely detailed analysis of different options, but we are not. We are just reacting to the signals we receive from the market, and even that is hard enough, so we do not have a capacity to think ahead."*

In any case, the farmers think that change will be slow: *"each of us has only 10 to 12 head of cattle. There is no way we can leave half of them for the winter, because we would lose the production of one year. So we will go slow, perhaps with two cows per year."*

Despite the achievements of CAL Chirre and its members, the amount of milk received, processed and sold by this CAL has decreased by 18% between 1997 and 1999, as the price of milk fell by more than 20%. The members are disappointed that they have not been able to increase the price of milk as they had expected when they started their CAL. But they do not blame the CAL, instead blaming the government for signing international trade agreements that let foreign milk into the country: *"It is the fault of Mercosur",* one of them said, *"so it is now up to the government to take action to put a stop to this situation which is bankrupting all milk producers, not only the small ones".*

However, they still see themselves as doing much better than their non-organized neighbors: *"those who did not join are really doing bad, they are barely surviving."*

CAL Chirre's members know that their individual monthly income is now lower than before, due to the lower price of milk. Yet each month they are informed that the CAL itself is showing a surplus. Why don't they lower the fee charged for each liter of milk to increase members' benefits? (I estimate that the fee could be lowered by at least 5% without seriously affecting the CAL's finances). When I asked this question to the board and grassroots members they unanimously agreed with one person's response: *"bread for today, hunger for tomorrow!".* They clearly see the organization as their main support system in a very complex and uncertain environment, and as such they are willing to make individual sacrifices to ensure its survival.

9.2.4 Agrícola Santa Bárbara S.A.

Agrícola Santa Bárbara S.A. (CAL Santa Bárbara) was formed in 1996. It is located in the municipality of Puerto Varas, Region X. The organization is the result of a more or less continuous process of collective action beginning as early as 1978, when a number of small farmers joined a program of on-farm trials and demonstration plots. The first local farmer to join these tests is the current President of CAL Santa Bárbara.

A brief history

In 1984, INDAP contracted the private consultant firm SERVIAGRO to provide technical assistance to farmers in the area under the Technology Transfer Program. The firm, whose work continues today, organized the first two groups which included about a third of the current members of CAL Santa Bárbara. SERVIAGRO and the farmers made rapid progress in improving basic technologies in wheat, potato and milk, taking advantage of what they call *"the price bonanza of 1985-88."* The good results reinforced the working relationship and the trust between the farmers and their advisors. Today, this advisory firm is deeply involved in the organization's strategic planning and decision-making processes, to the extent that one of its senior staff members is on the CAL's board (without voting rights).

When in the early 1990s INDAP began to promote the formation of CALs, this group was initially reluctant. According to the President of the organization, *"we never believed the story that we could force the dairy plants to increase prices when all we have are 1 million liters per year... to us that it a lot, for them it is nothing."* INDAP put pressure on them, arguing that a CAL was viable even if they only produced 500,000 liters per year. Despite the fact that they were producing 600,000 liters, farmers and SERVIAGRO felt this was not enough to sustain a CAL, so for some time they rejected INDAP's approaches.

Their opinion changed when the dairy industry started to tell farmers that unless they could deliver pre-cooled milk they would be left out of the market. Towards the end of 1994 they agreed to start a CAL and in six months (a record time) they had built the necessary infrastructure, negotiated a contract with a dairy firm, and started operations. However, it became obvious that the dairy agroindustry's interest in CALs was waning: of the five firms they contacted, only one (Loncoleche) was interested in discussing a contract. Also, the dairy firms, included Loncoleche, soon began to raise their quality and seasonality standards, to lower the price of milk, and to transfer the cost of several operations to the CALs (e.g., transportation of milk, recording and measurement of individualized production and quality levels, emission of a single payment to the CALs as opposed to one check for each farmer, and so on).

To start the CAL, the original group of about 30 farmers realized they would need to expand the membership, since the CAL had been projected to work at a 1.5 million liter level. They invited all the farmers in the neighborhood, and an additional 40 agreed to join. Loncoleche accepted all 70 members, on the explicit and formal condition that not a single additional farmer could ever be added to the group. Thus, all those who did not join the CAL have been excluded from the formal milk market, at least while Loncoleche continues as the dominant buyer in the area.

Organizational structure

Since they lacked a legal status, the group initially worked under the umbrella of the local Small Farmers' Association. To build the CAL and start operating, INDAP loaned the Association $ 26,300. Each of the 70 members had to make a cash contribution of $ 420 to repay that original loan.

The organization obtained its new legal status in 1996. As a Corporation, Agrícola Santa Bárbara had to issue shares. Each of the 70 members owns four shares which cannot be sold outside the group. Given Loncoleche's strict conditions about the number of members, the organization has ruled that if a shareholder dies, his or her place has to be taken by only one person; if the surviving family members cannot agree among themselves how to manage their four shares, then they have to sell them to the

Corporation.

The members I interviewed agreed with this system of closed membership: *"what we have developed is a way to understand our work.. it has taken us many years to learn, and we have gone through much pain... if we start to let in new people, then we will have some speaking in Chinese and others in Spanish! Besides, under the old ways of producing milk, we would have welcomed anyone, but today we are under strong pressure, and often have to change things from one month to the next... We know that in the end only ten percent of the farmers will remain in this business of producing milk; what we set out to accomplish is that this ten percent includes all of our 70 members.. we have already lost five or six, and with the summer prices they are paying this year, some more will leave."*

The corporation is legally required to hold a shareholders meeting only once a year; however, they have continued their long tradition of meeting once a month. Failure to attend incurs a fine. The board meets as often as necessary, at least once or twice a month, and informally almost every other day or so. The board members are elected for a two year period; in the last election, for example, two of them where reelected and three were changed. The CAL has a full time manager, who is also a shareholder and holds an Agricultural Technician degree.

From the start, this CAL concentrated on improving milk quality and stabilizing production throughout the year. However, their quality levels are still lower than the average of the Loncoleche Osorno plant, which is where their milk is delivered. To improve their performance, they have revised their internal bylaws each time the dairy industry has adjusted its prices and/or its grades and standards. On top of all the discounts applied by Loncoleche when milk does not meet their standards, this CAL has voluntarily adopted rules that increase the cost to the farmer of non-compliance (e.g., the farmer's price is not only discounted, but he or she is suspended for a number of days from delivering his or her milk). Furthermore, the CAL rules that anyone who breaks the same rule three times is suspended for life. Already one shareholder has been suspended (*"he still is a shareholder and we cannot take that away, but the law does not say that we have to buy his milk"*).

This CAL charges one of the lowest milk-processing fees in Region X, only $ 0.011/lt, half of what the other CALs included in my study are charging. Farmers see this fee as an indicator of the organization's achievements, but in fact it is artificially low, since the manager and the advisors recognize that it is not sufficient to cover the costs of running the organization. For example, *"the salary of the manager is subsidized by INDAP through the FODEM program"*.

To cover this gap between costs and income the other organizations I studied increased their membership fees. However, CAL Santa Bárbara has instead started new business enterprises in order to make a profit to subsidize the CAL's running costs. One of these initiatives failed (a potato marketing scheme), but two yield handsome profits: a 'mini market' and a gasoline station. The mini market, for example, has annual sales of around $100,000. As a board member explains, *"ideally we would like these other businesses to cover the full cost of the CAL, so that the farmer could receive the full price paid by the dairy plant"*. However, this strategy has risks; the potato marketing project left them with a debt that, with interest rates, has climbed to $ 42,000: if INDAP does not agree to forego this debt, it will bankrupt the CAL[50]. The gas station, a good source of income for a number of years, had to close down when a competitor opened another one in the area. They agreed with the owner of the new station that he would charged them lower prices for gasoline, in exchange for their closing down their own pump (*"it was a good business for a time, and we got out before we started losing money"*).

CAL Santa Bárbara's low service fee is also possible because of the contract between the CAL and the advisory firm. This establishes that one of the senior SERVIAGRO staff members will spend half time

[50] The farmers feel that INDAP should not ask them to repay that loan, because the whole potato marketing project was designed, managed and strongly promoted by INDAP. It failed after only one year, leaving a number of organizations with high debts! At the time of writing this note (June 2001), I have been told that INDAP is likely to cancel the debt.

supervising the overall operations of the CAL, supporting the hired manager, and especially focusing on assuring the quality of milk. Since INDAP subsidized most of the payment to the advisory firm, this results in lower administrative costs for the CAL. For example, in 1999 this CAL had gross sales of about $ 467,000; the cost to the farmers of the technical advisory services that year was equivalent to 2% of that value, while the INDAP subsidies represented an amount equivalent to 8% of the CAL's gross income. If the farmers had had to pay the full cost, it would have represented almost $ 0.02/lt, an amount that would be almost impossible for the farmers alone to pay.

This relationship between the advisory firm and the CAL is largely built on the trust of the farmers, itself a product of 16 years of continuous work with a good and proven track record of success. In turn, the advisory firm has proved adept at improving its knowledge and skills as required by the changing circumstances of its small farmer clients. For example, the two senior staff members have recently obtained MBAs in order to be able to operate better in the business- and market-oriented environment that their clients are facing.

Despite the fact that this fruitful relationship is grounded in very concrete achievements, one must remember that financially it is only possible through government subsidies to small farmers for private advisory service. Both the small farmers and the advisors readily acknowledge that it would not be possible to sustain these sorts of arrangements if subsidized technical assistance for small farmers was ended.

The very deep involvement of the advisors in the running of the CAL has created a high degree of dependence on the part of the farmers. For example, when due to some bureaucratic adjustments INDAP temporarily suspended the functioning of the advisory services, it only took five months for the old manager of the CAL and some of his cronies to run up a debt of $ 36,000 with Loncoleche, of which $ 21,000 disappeared! To this day, the CAL is facing the financial consequences of this mismanagement.

While the advisory firm has designed a very good training program for the farmers, the curriculum is strongly focused on production and technological issues, such as operation and maintenance of milking equipment, animal feeding, forage conservation, and so on, with much less attention to farm and business management topics. The opinion of the advisors is that *"in the short run, small farmers cannot operate alone in the very competitive market environment that characterizes the dairy industry; it will take many years of work before they can achieve a stage of complete independence."*

Performance analysis

The evolution of production in this CAL is similar to the other CAL I have described. In 1995, the CAL received, processed and sold only 650,000 liters, and this grew very rapidly until peaking in 1997 at close to 3 million liters. Since then, with the fall in milk prices (31% between 1995 and 1999), production has begun to decrease, reaching 2.2 million liters in 1999.

Of course, this drop in total production hurts the CAL's finances. In 1999, the organization generated a total income of $ 139,000: 62% from the mini market, 24% from CAL service fees, and 14% from the FODEM subsidy. Its total operational expenses were $ 118,000. The balance is destined to pay outstanding INDAP loans. The drop in milk production has meant that this amount is almost 10% lower than its 1997 income.

As in some of the other case studies, CAL Santa Bárbara uses the industry's system of price incentives to stimulate its members to improve quality and stabilize annual production. In November 1999, the farmer with the best price received $ 0.17/lt, while the lowest price was only $ 0.09/lt, with an average for the CAL of $ 0.15/lt. This system of incentives, together with the intense and open monthly discussion of the quality results (*"we discuss the five best and the five worst, why they got those results"*), plus the good technical advice these farmers receive, have resulted in quality standards that are twice as good as the average for the 64 CAL in Region X, and the best among the four CAL that I studied.

Yet nearly 60% of the members still achieve quality indicators below the CAL's own average. I asked

a group of six grassroots members to explain why new, harsher rules were approved unanimously in August 1999. After some discussion, they agreed that this was for two reasons: first and foremost, improving quality is the key to continued market access (*"and we have seen that those who left are really doing very, very bad"*), and if the Loncoleche contract is lost, they see absolutely no chance of gaining a new contract with another firm; second, I quote one of them, *"we have a business vision, which has to be a long term vision, the old vision is one of having bread today and being hungry tomorrow"*.

However, the members are not satisfied with the results so far in terms of milk quality and seasonal stability of production. Milk quality could be further improved by cooling milk between milking and reaching the CAL's cooling tank. The board is assessing the option of installing individual storage tanks for their largest producers, plus 'sector cooling tanks' distributed around the area so that each farmer could cut down the time it takes him/her to get the milk into cold storage. Getting these individual or sector cooling tanks is seen as a critical step by the manager: *"if we do it, we could get an additional $ 0.02/lt, and if we don't do it, in the end the larger members will do it by themselves... and ciao to the organization!"* The problem is that this plan would cost between $ 158,000 and $ 210,000 to implement, and would only be viable if the loans could be paid in a 10-year period, *"but no one wants to take the risk since we don't want to even think about how low the price of milk will be in ten years!"*.

9.3 The southern CALs' performance and impacts

This section discusses the performance of these four organizations at two different levels: (a) their economic and financial performance as businesses, and (b) the effects of CAL participation on members' households and farms.

9.3.1 Economic and financial performance

Table 9.2 shows the economic and financial performance of the four CALs for 1999 (1998 in the case of CAL Coyam). It is important to remember that 1999 was a year of very low prices, when production reached its lowest level. Hence, these results probably show these organizations at their weakest economic and financial levels since their inception.

All of the CALs, except CAL Coyam, had a positive net income. Relative to the value of their assets, CAL Santa Bárbara and CAL Arrayán show the best results, while relative to annual income, CAL Arrayán performs best.

Financially speaking, CAL Santa Bárbara is very exposed, since its debts are worth almost 80% of its assets (the result of the failed potato marketing project), although most of the debt is long-term and thus more manageable than if it was short-term. The remaining three CALs have their debts well under control.

All the CALs are receiving substantial grants from the public sector, but this mostly reflects the importance of the BOGAN program through which INDAP is supporting on-farm investments. Based on complementary information I was able to collect, I estimate that in none of the cases do government subsidies represent more than 5% or so of the operational or fixed costs of the CALs themselves.

In conclusion and with the possible exception of CAL Coyam, these EACs' economic and financial performances have been acceptable, even during years characterized by low prices and decreasing production.

Table 9.2 Economic and financial performance of four Milk Collection Centers in the south of Chile

Item	Coyam 1998	Arrayán 1999	Chirre 1999	Santa Bárbara 1999
Total revenue ($)	196,760	158,071	191,612	572,401
Total expenses ($)	198,198	138,225	184,502	551,171
Net result ($)	- 1,159	19,845	7,110	21,231
Total assets ($)	14,499	71,994	44,168	248,686
Current assets ($)	14,499	43,466	13,749	80,825
Noncurrent assets ($)	0	28,528	30,420	167,861
Total liabilities ($)	3,670	21,800	13,633	198,425
Current liabilities ($)	3,670	19,204	2,264	14,287
Noncurrent liabilities ($)	0	2,596	11,370	184,138
Net assets ($)	11,127	50,193	30,535	50,261
Grants from government ($)	33,342	51,974	33,066	74,725
Net result/total revenue	- 0.01	0.13	0.04	0.04
Total liabilities/total assets	0.23	0.30	0.31	0.80
Operational capital (current assets – current liabilities) ($)	11,127	24,262	11,485	66,538
Liquidity (current assets/current liabilities)	4.30	2.26	6.07	5.66
Dependency (grants/total revenue)	0.17	0.33	0.17	0.12

9.3.2 Impacts on members' farms and households

I will now analyze the impact of these four CALs on their members' farms and households.

Household income

In all four cases the CALs' members are doing substantially better than their non-organized neighbors in terms of net annual household income (Table 9.3). The differences are particularly striking for CAL Santa Bárbara and Chirre.

In all cases, farm income is the main component of total household income. The members, however, generate more non-farm income than their non-organized counterparts, except for CAL Arrayán, where this figure is the same for both groups. Unearned income is much less important, with the only exception being CAL Chirre members.

Table 9.3 Income and income composition, CAL Santa Bárbara, Coyam, Arrayan, and Chirre (1999-2000 agricultural season, $)

INDICATORS	SANTA BÁRBARA		COYAM		ARRAYÁN		CHIRRE	
	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.
Net hh income	27,046	4,399	7,190	4,256	28,532	22,936	12,621	7,297
Earned net hh income	27,015	4,273	6,720	4,459	27,693	21,415	10,225	6,763
Unearned net hh income	31	127	469	67	839	1,522	2,396	534
Non agricultural net income	3,247	228	1,955	526	3,322	3,122	8,146	3,368
Farm net income	25,067	4,227	6,134	4,354	26,364	19,853	8,415	4,926

Farm profits, production and sales

When comparing farm net income between the members and the non-members of the four CALs, the differences are 6 to 1 in the case of CAL Santa Bárbara, and between 1.3 and 1.7 to 1 in the other three cases. This evidence supports members' opinions that their non-organized neighbors are getting much poorer farm results.

For crop and pasture production, these figures reflect the fact that members produce more by value than non-members. The gross value of production closely mirrors the results already described for farm net income, meaning that members are not necessarily producing better, but are producing more (in the area of crops and pastures). I suspect this result is probably due to members having more access to cash, both from the greater household income, but also because by being organized they have better access to loans and grants from INDAP. Just as non-members have reduced milk production to a greater extent than members, they are likely to have also been forced to decrease the area under crops and improved pastures.

An extremely interesting result in shown in Table 9.4: in all cases, except for CAL Chirre, the non-

participants have *better* economic results for milk production than the EAC members. This is because, compared to non-participants, participants:

- produce much more milk (between 41% and 142% more),
- obtain better prices per liter of milk (around 3% to 13% higher, with the exception of CAL Coyam, where the price paid to the participants is 3% lower than that received by the non-participants),
- generate a much higher gross income (between 37% and 149% higher),
- but also incur much higher costs per liter (between 0.5% and 80% higher), with the exception of CAL Chirre where participants' costs per liter are 7% lower,
- with the final result that the non-participants end up with a lower gross margin per liter of milk, with the exception of CAL Chirre where the participants are ahead.

Table 9.4 Average per farmer economic results of milk production, CALs Santa Bárbara, Coyam, Arrayán, and Chirre (1999-2000 agricultural season)

INDICATORS	**SANTA BÁRBARA**		**COYAM**		**CAL ARRAYÁN**		**CAL CHIRRE**	
	Parts.	**Non-parts.**	**Parts.**	**Non-parts.**	**Parts.**	**Non-parts.**	**Parts.**	**Non-parts.**
Production (lts)	34,960	16,225	14,559	10,347	16,965	10,335	29,983	12,390
Price per liter ($/lt)	0.14	0.13	0.13	0.14	0.14	0.13	0.14	0.13
Gross income ($)	5,033	2,065	1,947	1,427	2,326	1,370	4,103	1,644
Direct costs ($)	6,981	1,798	2,218	1,573	2,308	928	2,609	1,158
Direct costs per liter ($/lt)	0.20	0.11	0.15	0.15	0.14	0.09	0.09	0.09
Gross margin ($)	-1,948	267	-272	-146	18	442	1,494	485
Gross margin per liter ($/lt)	-0.06	0.02	-0.02	-0.02	0	0.04	0.05	0.04

This result is consistent with the information gathered in the interviews and meetings with the farmers and their advisors. CAL members stated that maintaining market access was the primary objective; in economic terms this means they are using practices and technologies (both at the farm and EAC levels) which are not profitable given the current price of milk. In fact, these farmers are supporting the CALs financially at the expense of their own individual income. This is not surprising if we remember that, because of the drop in prices, their service fees have grown in relative terms to represent up to 20% of the price paid by the dairy plants.

The non-member farmers who mainly trade in the informal markets are freer to cut down on more expensive practices. But the members cannot afford to cut down quality or seasonal stability, as this would surely mean losing their contracts with the dairy firms.

Ultimately, the explanation for the magnitude of the effect of decreasing milk prices on farm income, lies in the low productivity achieved by most of these farmers. This is demonstrated by the direct

production costs per liter shown in Table 9.4; these are way too high when compared to those of many medium and larger farmers. These small farmers can sustain these high production costs because family labor plays a major role. However, sustaining production on the basis of cheap family labor certainly results in lower total household income. This is because in Chile the opportunity cost of labor is so high, with more than 40% of total rural income coming from off-farm employment, with real wages in the agricultural sector having grown continuously for more than 10 years due to the expansion of the for-export sector and with low unemployment rates both in the countryside and in the economy at large.

I feel it is important to distinguish between the enterprise (e.g., the CAL itself), and the associative project, which must include actions both at the EAC level and at the level of members' farms. Ultimately, the EACs' performance and sustainability will depend to a large extent on productivity improvements made at the farm level. Besides, increased productivity at the farm level is the only way to deal with the permanent tension between prioritizing the results and survival of the organization, against those of the members. Table 9.4 shows that, given the low productivities of the members of these CALs, when the prices fell, the conflict between firm and members was resolved in favor of the former and at the expense of the latter. If, as many of the farmers told me during our interviews, they had invested part of the profits made during the 'good years' in, for example, increasing winter production by improving pastures, then the results in Table 9.4 would have been different, and the inevitable adjustment during the 'bad years' would have been less detrimental to the individual farmers (for example, because if average prices had increased due to higher winter production, it could have been possible to drop the service charges, instead of having to increase them, as most CALs had to do).

Of course, organized farmers will not be able to sustain their organizations at the expense of their farm incomes indefinitely if prices continue their downward trend. Fortunately, I can report that in the years after I collected my data, the trend was reversed and prices improved substantially, to an average level in Region X of about Chilean $ 103/lt in the year 2000, an improvement that would again give these farmers a significant profit (ODEPA, 2001).

Yet, in the long run the lesson is clear: the members of the CALs and the CALs themselves are operating with productivities and costs that leave them very vulnerable to sustained low prices. It would seem very important for them to take advantage of the new cycle of high prices to: (a) accelerate their plans to further improve yields, milk quality and seasonal stability of production, (b) capitalize their CALs and strengthen their complementary income-generating activities.

Dealing with member heterogeneity

The above results are averages for the CALs, and as such mask a very important factor that has a major influence on their performance: the heterogeneity of their members. The reader will remember that the CALs were formed when the dairy industry's major objective was to increase total production to meet the growing demand for dairy products. The pricing system was such that a CAL would gain most if it increased membership so as to be able to sell more milk, regardless (to a certain extent) of the quality or seasonal stability of production. This resulted in very heterogeneous organizations in terms of the production capacities of their members. When the priorities of the dairy industry changed in favor of milk quality and seasonal stability of production, this heterogeneity became a major liability for the EACs, because many members lacked the resources to respond rapidly to the new market demands.

I can illustrate this issue and its effects with data from CAL Chirre for the 1999 season. The number of cows per member ranged from 5 to 19, with a coefficient of variation (standard deviation divided by

the mean) of 100%. Average milk yields ranged from 750 to 2,143 lt/cow/year, with about half the members below 1,500 lt/cow/year and with a coefficient of variation of 38% Spring-summer production per member was 2,474 lt to 41,468 lt, with a coefficient of variation of 74%. Production during the critical winter months ranged from 0 to 19,700 lt. The ratio between spring-summer and winter production ranged from an almost ideal 1.19 to 12, with an average of 3.6 and a coefficient of variation of almost 60%. Bacterial counts (a major indicator of quality) range from 2,000/ml to almost 800,000/ml, with a coefficient of variation of 216%. Considering the wide heterogeneity in all these performance indicators, it is no surprise that the prices per liter received by each farmer also differ sharply: the minimum price received by each farmer ranged between $ 0.10/lt and $ 0.16/lt, while maximum prices varied between $ 0.11/lt and $ 0.22/lt.

The first implication of this heterogeneity is that CAL Chirre's farmers will have widely different capacities for improving their performance indicators. To a CAL member with five cows producing less than 5,000 lt of milk per year, it is hardly worth investing in improving the sanitary conditions of his or her milking shed, as the cost would be much higher than the total value of one year's worth of milk. On the other hand, to a farmer who has 19 cows and produces 200,000 lt of milk, such investments would represent less than 10% of the value of his or her milk. These differences in capacity to adjust to market conditions become even greater when talking about the investments needed to improve winter production, as the basic means to achieve better seasonal stability.

On the other hand, the pricing rules imposed by the market and followed by the CAL also have different meanings for different members. To a farmer receiving an average price of $ 0.11/lt, the CAL service fee represents 20% of the price, while for a farmer who had the capacity to invest and improve his or her performance, the fee may represent as little as 9% of the price paid by the dairy plant.

The point is that when the members of the CALs are as heterogeneous as in CAL Chirre (and the situation is much worse, for example, in CAL Coyam), it becomes almost impossible to establish costs and benefit rules that have more or less equal impact on all members. A rule that for some members promotes improved performance, to others can represent an absolute barrier to further action.

Member heterogeneity is a major threat to these CALs under current market conditions. And it will not be a simple task for these organizations to solve this problem. Any attempt to expel a large fraction of the members would be a major disruption to the internal life of the organization and to the surrounding rural community. Furthermore, even the least productive members make an indispensable contribution to the CALs. In the case of CAL Chirre, for example, the milk production of the smallest members makes up between 12 and 15% of total production. If the CALs lost this production, it would result in increased fees for those who remain, and probably in lower average prices due to the loss of incentives that the dairy firms still pay to suppliers of larger volumes.

Regardless of what the CALs decide, the market is making its own adjustments, with CALs' membership falling significantly between 1997 and 1999. However, this market-driven adjustment does not automatically affect the smallest members. Firstly, there are no statistically significant correlations between farm size or number of heads of cattle, and the performance indicators I describe above. Secondly, almost none of these farmers produce milk exclusively; like most small farmers throughout the world, they maintain diversified farming systems, and, as small farmers do, will use other crops and enterprises to mitigate the shocks such as those resulting from the decreasing price of milk. Hence, some of the smallest farmers have and will continue to raise the productivity of their milk operation. Those who have diversified their farm activities may well draw on their other resources to remain with the CAL as this represents the only option to maintain access to the formal dairy market, and, not least, to the many non-market benefits that result from being an EAC member.

Technology adoption and yields

One of the most striking differences between CAL members and non-members is in the adoption of new production and marketing technologies (Table 9.5). In particular, members are better than non-members at using animal production technologies, such as health, artificial insemination and genetic improvements. However, they are also ahead of non-members in crop diversification, use of fertilizers, access to machinery and equipment, and use of improved seeds and new varieties.

Table 9.5 Technological changes implemented in the past five years, CALs Santa Bárbara, Coyam, Arrayán, and Chirre

INDICATORS	SANTA BÁRBARA		COYAM		CAL ARRAYÁN		CAL CHIRRE	
	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.
	Yes %	Yes %	Yes %	Yes %	Yes %	Yes %	Yes %	Yes %
Crop diversification	50	40	60	50	50	60	44.4	27.3
Marketing of inputs of products	80	40	50	30	40	10	22.2	9.1
Machinery and equipment	70	60	50	10	20	30	66.7	9.1
Constructions and installations	50	50	90	50	50	40	44.4	45.4
Crop varieties and seed quality	70	33.3	80	60	30	70	55.6	36.4
Use of fertilizers	100	40	80	70	80	70	77.8	36.4
Weed control	50	50	50	60	50	40	66.7	36.4
Insect and disease control	80	50	20	40	70	30	55.6	36.4
Cattle breeds	60	20	40	30	0	50	22.2	27.3
Reproduction of cattle	80	40	70	70	40	20	77.8	18.2
Sanitary management of cattle	100	70	70	100	70	50	100	90.9

Table 9.6 Average yields, CAL Santa Bárbara, Coyam, Arrayán, and Chirre (1999-2000 agricultural season)

INDICATORS	SANTA BÁRBARA		COYAM		ARRAYÁN		CHIRRE	
	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.
Potatoes (kg/ha)	28,090	19,651	23,914	19,500	16,203	17,688	23,083	10,845
Milk (Lt/cow/yr)	1,825	1,629	1,933	1,509	1,500	1,195	2,214	1,452

Because of this, members are obtaining higher yields than non-members (Table 9.6). Members' annual milk yields per cow are between 12% and 53% higher than those of the non-members. In potato yields (perhaps the main crop of small farmers in Region X), most of the members come out ahead of non-members by 23% to more than 100%.

Access to agricultural services

Virtually all the small farmers included in the survey (members and non-members) have access to some form of technical assistance, from the CAL advisors, other INDAP consultants, NGOs, or private advisors. However, in all four cases CAL participants spend more on these services. Members also tend to pay for a wider variety of technical assistance providers, including the CALs, the advisors hired with the INDAP subsidy, and private advisors working independently, while the non-members only pay for the services of firms linked to INDAP.

However, there are important differences in access to credit (Table 9.7). Compared to the non-members, a much higher proportion (75% to 200% higher) of the members have access to at least one type of agricultural loan. Also, the members obtain loans that are 20% to 50% larger than the non-members, with the exception of CAL Arrayán. Yet, the total average debt of these farmers is usually below $ 2,000, an amount which is very reasonable and even low considering the value of their assets and their production.

Table 9.7 Access to credit, CAL Santa Bárbara, Coyam, Arrayán, and Chirre (1999-2000 agricultural season)

INDICATOR	SANTA BÁRBARA				COYAM				CAL ARRAYÁN				CAL CHIRRE			
	Parts.		Non-parts.		Parts.		Non-parts.		Parts.		Non-parts.		Parts.		Non-parts.	
	Nº	$	Nº	$	Nº	$	Nº	$	Nº	$	Nº	$	Nº	$	Nº	$
Total loans	7	1,602	4	1,343	9	1,743	5	1,272	8	1,182	4	1,992	7	1,457	2	973
Short term loans	5	1,465	3	1,117	9	115	5	91	8	1,182	3	554	4	1,272	2	973
Long term loans	2	1,945	1	2,023	7	694	5	1,083	0	0	1	631	3	1,703	0	0
INDAP loans	6	179	4	1,343	1	1,547	1	946	8	1,182	3	554	7	1,457	2	973
State bank loans	0	0	0	0	9	1,229	5	1,272	0	0	1	631	0	0	0	0
Private banks loans	0	0	0	0	1	4,625	0	0	0	0	0	0	0	0	0	0

9.4 Explaining the performance differences

In previous sections we saw that CAL Coyam was not performing as well as the other three. We also saw significant differences between members and non-members in terms of household and farm income, production, technology adoption, yields and access to certain agricultural services. In this section I will explain these differences.

Table 9.8 Household composition, CALs Santa Bárbara, Coyam, Arrayán, and Chirre

INDICATORS	SANTA BÁRBARA		COYAM		CAL ARRAYÁN		CAL CHIRRE	
	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.
Members of household	3.6	4.1	4.2	3.9	4.4	3.7	3.4	3.2
Female members	1.7	2.4	2	1.8	2.4	1.5	1.6	1.8
Male members	1.9	1.7	2.2	2.1	2	2.2	1.9	1.5
Members 0-12 yrs.	0.5	1	0.8	0.3	1	0.3	0.3	0.3
Members 13-18 yrs.	0.3	0.3	0.3	0.5	0.2	0.1	0.3	0.3
Members 19-30 yrs.	0.3	0.9	0.8	0.6	1	0.7	0.8	0.6
Members 31-45 yrs.	1	0.6	0.6	0.8	0.5	0.6	0.2	0.5
Members 46-65 yrs.	0.9	1	1.3	0.9	1	1.2	1.3	1
Members 66+ yrs.	0.6	0.3	0.4	0.8	0.7	0.8	0.4	0.6
Schooling members 7 yrs or +	7.2	6.8	5.7	6.9	7.1	5	6.8	5.2
Schooling members 15 yrs or +	7.5	6.8	6.1	7	7.6	5	6.8	5.2
Schooling members 19-30 yrs or +	6.4	6.5	4.2	4.2	6.7	5	6.8	3.8
Schooling members 31-45 yrs or +	6.3	3.3	3.4	4.5	2.4	3.5	1.8	3.5
Schooling members 46-65 yrs or +	4.5	3.6	5.2	4.6	5.4	3.4	5.2	2.1
Schooling members 66 yrs or +	2.3	1	0.4	1.3	1.3	1.1	2.5	1
Schooling of head of hh	7.1	5.1	5	5.1	6.1	3.5	6	4.1
Schooling of spouse	5.3	4.4	4.2	5.1	7.4	3	4.9	3.2
Schooling of sons/daughters	5.3	5.6	6.6	8.1	4	6	4.8	5.9
Schooling of other members hh	1.6	1.3	1.3	2	1.9	2.4	3.4	1.1
Schooling female members hh	6.8	5.8	5.1	5.7	7.2	4.1	6.5	4.8
Schooling male members hh	7.2	4.5	5.1	6	6	5.5	6.7	4.5
Age of head of hh	54.5	53	57	60	52.9	64.4	54.7	57.2
Age of spouse	42	34	37	51	51.5	50.3	35	48.1
Age of sons/daughters	16.8	14.7	20	18.6	13.7	23.1	10.1	17.9
Dependency ratio	0.6	0.5	0.5	0.6	07	0.6	0.5	0.6

9.4.1 Farmers' assets

The performance differences between the CALs and between members and non-members cannot be explained by differences in the specific types of assets available to these households, as I shall explain.

Household characteristics (human capital)

There are almost no significant differences between the four CALs and between members and non-members in terms of household composition and their sex, age, and educational characteristics (Table 9.8).

Physical and financial assets

Only in the case of CAL Chirre do members have access to more land than non-members (Table 9.9). The average size of the farms (between 20 and 40 ha) clearly places these farmers in the category of commercial small producers, although, as we have seen, each CAL has a significant share of members with smaller farms (the coefficient of variation of the total farm size variable is in all cases larger than 50%).

Table 9.9 Land assets, CAL Santa Bárbara, Coyam, Arrayán, and Chirre

INDICATORS	SANTA BARBARA		COYAM		CAL ARRAYAN		CAL CHIRRE	
	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.
Land owned by hh (ha)	35.16	38.60	19.76	22.05	26.43	24.25	41.37	23.83
Land taken by hh, shareholding (ha)	0.45	0	0	0	0	0	0	4.54
Land taken by hh, rental (ha)	0	0	0.35	0	1	0	0	0
Land taken by hh, other contracts	3.50	0	0	0	4.70	0	0	0
Land let by hh, shareholding (ha)	0	0	0	0	0	0	0	0
Land let by hh, rental (ha)	0	1.90	0	0.10	0	0	0	0
Land let by hh, other contracts (ha)	0	0	0	2.50	0	0	0	0
Land under management by hh (ha)	39.56	36.70	20.11	19.45	32.13	24.25	41.37	28.38

In all cases, land rental and sharecropping arrangements are not very common, and over 80% of the total land is owned by the household, both for members and non-members. None of these small farmers has access to irrigation, a resource which is very uncommon in Region X.

There are no important differences in the distance between the farms and main roads with public transportation, which are around 1 to 4 km. The nearest town or city is about 10 to 20 km away and in all cases the roads are paved or gravel. These are not isolated farms.

The total value of members' physical assets (buildings, machinery, cattle and land) tends to be somewhat greater than that of the control groups, although the differences are not large, with the

exception of CAL Chirre, where members are 50% wealthier than their non-organized neighbors (Table 9.10). The total value of these farmers' assets (members and non-members alike) ranges between $ 60,000 and $ 120,000.

Table 9.10 Fixed and quasi-fixed assets, CALs Santa Bárbara, Coyam, Arrayán, and Chirre ($)

INDICATORS	SANTA BÁRBARA		COYAM		CAL ARRAYÁN		CAL CHIRRE	
	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.
Value of buildings and infrastructure	41,610	24,443	18,033	14,789	17,335	18,895	25,725	12,584
Value of machinery and equipment	13,238	4,646	650	3,269	2,037	6,962	4,606	2,081
Value of land owned by hh	78,305	80,680	33,010	28,370	59,178	76,400	105,292	75,538
Value of livestock	10,822	5,127	4,810	4,829	6,345	5,584	7,398	4,195
Total value of physical assets	138,492	111,989	56,309	48,800	84,895	105,033	142,814	94,934

9.4.2 Social capital

I will discuss the influence of social capital on the comparative performance of these farmers and CAL from four points of view: participation in organizations, social conditions for cooperation, systems of rules that govern the relationships among farmers, and participation of the organization in larger networks.

Participation in community and economic organizations

Aside from CAL membership, there are no large differences between members and non-members in terms of their participation in either economic or community organizations, although the differences are somewhat greater in the cases of CAL Santa Bárbara and, in particular, of CAL Coyam, whose members are significantly more involved than the non-members in other economic organizations (Table 9.11).

However, there are very important differences in the way members and non-members perceive the benefits and costs of participating in an EAC (Table 9.12). Significantly, in the three cases with better economic and financial performance and with a richer and more intensive degree of participation and organizational commitment on the part of the members (Santa Bárbara, Arrayán and Chirre), participants were less positive than non-participants about the benefits of membership, and also much

Table 9.11 Participation in development projects and organizations, CALs Santa Bárbara, Coyam, Arrayán, and Chirre

INDICATORS	CAL SANTA BÁRBARA		CAL COYAM		CAL ARRAYÁN		CAL CHIRRE	
	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.	Parts.	Non-parts.
	Yes %	Yes %	Yes %	Yes %	Yes %	Yes %	Yes %	Yes %
Organizations or projects with economic objectives								
Marketing of products or purchasing of inputs (other than CALs)	60	30	60	0	0	0	0	0
Soil conservation and pasture improvement	30	0	30	20	0	0	0	0
Storage of products	40	0	60	0	10	0	0	0
Youth	0	0	0	0	0	0	0	0
Women's	0	0	40	10	0	0	0	0
Trade Association	10	10	50	10	0	0	11.1	0
Cooperative	10	0	0	10	0	0	0	0
Organizations or projects with social development objectives								
Neighborhood committee	40	30	100	80	80	90	44.4	27.3
Sports, culture and recreation	20	10	30	20	40	20	22.2	18.2
Housing or local improvement	10	20	40	30	30	30	33.3	27.3

Table 9.12 Perception of costs and benefits of participating in EACs, CALs Santa Bárbara, Coyam, Arrayán, and Chirre

INDICATORS	SANTA BÁRBARA				COYAM				CAL ARRAYÁN				CAL CHIRRE			
	Parts.		Non-parts.		Parts.		Non-parts.		Parts.		Non-parts.		Parts.		Non-parts.	
	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %
Benefits																
Improved household income	30	50	33.3	66.7	20	60	66.7	0	60	0	0	0	0	88.9	0	0
Improved yield and production	20	70	33.3	66.7	10	80	25	75	40	40	0	0	22.2	77.8	100	0
New crops and livestock	40	60	33.3	66.7	10	80	33.3	66.7	40	40	40	40	22.2	77.8	100	0
Improved marketing	40	20	0	100	50	30	100	0	70	20	0	0	33.3	44.4	100	0
Improved prices of products	77.8	11.1	66.7	33.3	80	10	100	0	100	0	0	0	77.8	22.2	100	0
Lowered production costs	30	30	33.3	33.3	40	50	66.7	33.3	30	50	0	0	11.1	88.9	0	100
Farm improvements	30	70	0	100	0	100	0	66.7	40	50	0	0	0	88.9	100	0
Improved quality of life for family	40	40	0	100	20	70	33.3	66.7	55.6	11.1	0	0	22.2	66.7	100	0
Improved quality of life for women	57.1	42.9	0	100	11.1	66.7	50	50	77.8	11.1	0	0	33.3	66.7	0	100
Improved quality of life for youth	50	50	0	50	42.9	57.1	50	50	77.8	0	0	0	44.4	44.4	0	0
Optimistic view of the future	37.5	62.5	33.3	0	0	50	33.3	66.7	55.6	22.2	0	0	33.3	55.6	100	0
Improved relations with government agencies	50	50	33.3	0	11.1	55.6	33.3	66.7	33.3	33.3	0	0	12.5	87.5	100	0
Improved relations with municipal government	62.5	25	66.7	0	0	70	33.3	66.7	20	60	0	0	42.9	57.1	0	100
Improved relations with neighbors	30	70	33.3	66.7	0	80	0	50	33.3	66.7	0	0	11.1	77.8	0	100
Doing better as small farmers	20	70	0	33.3	0	80	0	100	50	30	0	0	11.1	77.8	0	100
Costs																
Incurring debts	10	60.2	66.7	33.3	10	80	33.3	66.7	30	50	0	0	22.2	77.8	0	100
Membership fees	0	100	66.7	33.3	20	80	0	100	20	80	0	0	11.1	88.9	0	100

INDICATORS	SANTA BÁRBARA				COYAM				CAL ARRAYÁN				CAL CHIRRE			
	Parts.		Non-parts.		Parts.		Non-parts.		Parts.		Non-parts.		Parts.		Non-parts.	
	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %	Not True %	True %
Greater risks in agriculture	50	50	66.7	33.3	40	50	50	50	40	50	0	0	44.4	44.4	100	0
Loss of time in meetings	60	40	33.3	33.3	40	60	33.3	66.7	60	10	0	0	66.7	33.3	0	0
Share of product prices taken by org.	11.1	88.9	66.7	33.7	10	80	33.3	66.7	10	90	0	0	11.1	88.9	0	100
Worsened relationships with neighbors	70	10	100	0	100	0	100	0	100	0	0	0	77.8	11.1	100	0
Some take advantage of the rest	37.5	62.5	66.7	33.3	66.7	33.3	50	50	77.8	22.2	0	0	44.4	55.6	100	0
Less trust in the future	44.4	55.6	66.7	0	55.6	11.1	100	0	57.1	42.9	0	0	33.3	55.6	100	0

Difference of 100% is due to those who did not answer or said they did not know.

more aware of the actual costs of participation. In the low-performing CAL Coyam the opposite is true: the members are more positive about the benefits and less aware of the actual costs of participation. This result is similar to the case studies of CAL Ranchillo and Lo Ovalle, where members of the better performing EACs seem much more critical about costs and benefits of participation in these organizations.

The members of CALs Santa Bárbara, Arrayán and Chirre are especially downbeat about the economic benefits of participation, in terms of product prices, marketing, household income and so on. But they are more optimistic than the non-members about their future in general and as small farmers, as well as with respect to improved relations with their neighbors and with the central and municipal governments.

Members of the three better-performing CALs are also much more aware than non-members of the actual costs of participation, such as increased indebtedness or the need to pay membership and service fees to the organization.

The results for CAL Coyam are almost the opposite. Here, the members feel that the organization has allowed them to improve prices, marketing and household income, despite the fact that the quantitative evidence from the survey tends contradict this. There are no differences among members and non-members when it comes to appreciating the costs of participating in an EAC.

One possible explanation for the notable difference in points of view between members of CALs Santa Bárbara, Arrayán and Chirre, on the one hand, and CAL Coyam on the other, is that for the former members have much more access to detailed information and real debate about their organizations' actual results, achievements and problems. In the interviews with CAL Coyam members, I always ended up feeling that they tended to rely more on the 'official' discourse promoted by the leadership and by their advisors, but that they were much less aware of the actual details of their results, achievements and constraints. For example, none of them was fully aware of how prices were set for each member, or what use was made of the organization's income. I do not mean to say that grassroots members of CAL Coyam were totally unaware of what was happening, but they clearly moved more in the area of 'suspicions' than of clear and detailed information.

Norms which foster cooperation

Trust and reciprocity are two important social norms attributed by the literature as important foundations for cooperative behavior.

When compared to non-members, the members of the four CALs trust other people more and are more open to thinking that other individuals will in general try to be fair and to help others instead of taking advantage of them. They also feel that it is easier to become organized now than in the past, that they participate more than their neighbors in community and farmers' organizations, and that these organizations are almost always useful for them and for the majority of the participants (Table 9.13).

Networks

In many respects, there are no major differences among the four CALs in terms of the networks in which they participate as organizations and through which they engage with other market and non-market agents.

With respect to the rural communities to which these organizations belong, the four CALs grew out of

Table 9.13 Trust, cooperation, reciprocity and view of the future, CAL Santa Bárbara, Coyam, Arrayán, and Chirre

QUESTION	SANTA BÁRBARA				COYAM				ARRAYÁN				CHIRRE			
	Parts.		Non-parts.		Parts.		Non-parts.		Parts.		Non-parts.		Parts.		Non-parts.	
Ease of organizing with neighbors, compared to 10 years ago	More Difficult %	Easier %	More Difficult %	Easier %	More Difficult %	Easier %	More Difficult %	Easier %	More Difficult %	Easier %	More Difficult %	Easier %	More Difficult %	Easier %	More Difficult %	Easier %
	40	20	20	40	0	80	0	50	10	70	40	40	22.2	77.8	18.2	36.4
Household's degree of participation in organization compared to neighbors	Less %	More %	Less %	More %	Less %	More %	Less %	More %	Less %	More %	Less %	More %	Less %	More %	Less %	More %
	10	30	60	10	10	30	40	0	20	0	40	0	0	66.7	36.4	9.1
Community and farmers´ organizations are useful	Never or Almost never %	Always or Almost Always %	Never or Almost never %	Always or Almost Always %	Never or Almost never %	Always or Almost Always %	Never or Almost never %	Always or Almost Always %	Never or Almost never %	Always or Almost Always %	Never or Almost never %	Always or Almost Always %	Never or Almost never %	Always or Almost Always %	Never or Almost never %	Always or Almost Always %
	20	80	30	50	10	80	20	70	0	90	20	80	0	100	18.2	72.7
For you and your family, participation in an organization is…	Waste of time	Beneficial	Waste of time	Beneficial	Waste of time	Beneficial	Waste of time	Beneficial	Waste of time	Beneficial	Waste of time	Beneficial	Waste of time	Beneficial	Waste of time	Beneficial
	20	70	50	40	10	90	0	60	20	70	0	50	0	77.8	36.4	27.3
Farmers' and community organizations benefit…	Only a few or none	The majority	Only a few or none	The majority	Only a few or none	The majority	Only a few or none	The majority %	Only a few or none %	The majority %	Only a few or none %	The majority %	Only a few or none %	The majority %	Only a few or none %	The majority %
	10	90	60	20	0	100	20	50	30	70	50	20	33.3	66.7	36.4	63.6
Can you trust most people?	No %	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %	Yes %
	80	10	80	10	50	50	50	20	60	40	70	30	44.4	44.4	63.6	9.1
Most people…	Only care for themselves %	Try to help others %	Only care for themselves %	Try to help others %	Only care for themselves %	Try to help others %	Only care for themselves %	Try to help others %	Only care for themselves %	Try to help others %	Only care for themselves %	Try to help others %	Only care for themselves %	Try to help others %	Only care for themselves %	Try to help others %
	50	40	100	0	30	60	50	20	60	30	70	30	55.6	22.2	81.8	0
Most people…	Take advantage of the rest %	Try to be fair %	Take advantage of the rest %	Try to be fair %	Take advantage of the rest %	Try to be fair %	Take advantage of the rest %	Try to be fair %	Take advantage of the rest %	Try to be fair %	Take advantage of the rest %	Try to be fair %	Take advantage of the rest %	Try to be fair %	Take advantage of the rest %	Try to be fair %
	50	20	60	10	30	50	20	60	30	40	70	20	33.3	55.6	72.7	9.1
Has your situation as small farmers compared to 10 years ago…	Worsened %	Improved %	Worsened %	Improved %	Worsened %	Improved %	Worsened %	Improved %	Worsened %	Improved %	Worsened %	Improved %	Worsened %	Improved %	Worsened %	Improved %
	70	30	80	10	0	80	60	20	50	50	40	50	45.5	55.5	11.1	88.9
In the next 10 years, will your situation as small farmers…	Worsen %	Improve %	Worsen %	Improve %	Worsen %	Improve %	Worsen %	Improve %	Worsen %	Improve %	Worsen %	Improve %	Worsen %	Improve %	Worsen %	Improve %
	20	60	0	10	20	10	10	20	10	50	20	70	11.1	66.7	18.2	63.6

pre-existing informal community groups. These groups gradually became formal organizations as the political environment in the country changed from one in which collective action was discouraged and repressed, to one that promoted organized civic participation in different spheres of social life. In the specific case of CAL Coyam, the small farmers have forged a strong link with at least one large and dynamic farmer who is also a regional leader of milk producers.

The four CALs are intimately connected with INDAP, a government agency. I often heard the farmers say things like *"we are a product of INDAP"* or *"without INDAP we would have disappeared as small farmers"*. INDAP's policies and programs created the political climate for these organizations to form, and supplied the financial and technical resources and expertise to turn that incentive into fruitful action. There is very little doubt that the survival of these CALs at least in the short-term, is extremely dependent on INDAP's support.

The four CALs and the community groups from which they grew, have a long history of interaction with intermediate agents, such as NGOs, extension agents, or church organizations. Through them, they can reach out to other public or private agencies, have access to information and expertise, capture public or non-governmental resources, and interact with other farmers' groups in the region or elsewhere. In fact, none of the four CALs would have been possible without the cooperation and active work of these intermediate agents.

Yet, there are important differences in the way these CALs interact today with these intermediate agents. In the case of CAL Santa Bárbara, the private consultant firm working with them continues to play an essential leadership role. Its involvement in the organization's daily life and operations goes way beyond a nominal advisory role. CAL Chirre and CAL Arrayán rely on their external advisors for technical and managerial support, but are significantly more autonomous in their decision-making; their relationship conforms more to the idea of a contractual arrangement, with well-specified and limited roles. In the case of CAL Coyan, the advisory firm - apparently in agreement with the commercial farmer who is the leader of the organization - plays a very traditional paternalistic role. It decides by itself what is best for the farmers, with little or no discussion or consultation, to the extreme point of handing money belonging to some members to others, as it does each month when it 'redistributes' the milk payments that are due to each!

By definition, the four CALs are strongly and formally linked to the dairy market through their contracts with specific firms, all of which are major industry players in Chile. The signals sent by these market agents through their pricing and standards policies are major determinants of the specific objectives, priorities and lines of activities of the Santa Bárbara, Arrayán and Chirre CALs. In the case of CAL Coyam, these market signals are 'blurred' by the direct intervention of the advisory firm and the commercial farmer who leads the organization. His *ad hoc* 'price and income redistribution system' works against the trends favored by the market by artificially creating a strong disincentive to all types of members to improve the productivity of their farms, the quality of their milk, and the seasonal stability of production. By redistributing income from the better- to the worse-performing members, this top-down set of rules discourages those farmers who have made an effort to improve their performance and who cannot capture the benefits of their work, and it also discourages those who are behind because they can free ride on the efforts of their fellow members.

Systems of rules

Table 9.14, adapted from the work of Ostrom (1990), summarizes the information collected during the field work relative to the system of rules that govern these four organizations.

To summarize Table 9.14 there are three different rule systems:

(a) CAL Coyam: the *de facto* system of rules encourages free riding by around half the members of the organization, who reap important benefits without having to incur the costs of improving their milk production. According to some respondents, this peculiar system of rules means that these free riders get as much as 50% more income per liter than they would otherwise.

This money is being taken from those members who have invested in improving their milk quality and stabilizing their annual production. Under normal circumstances, one would expect these members to change the rules (actually, to enforce their written rules and bylaws), or else leave the organization.

Why has this not occurred? Most farmers do not have the option of leaving the CAL, as the industry has in fact closed itself to new suppliers; those who leave risk losing their access to the formal dairy market. This illustrates a point I heard expressed by many small farmers during the interviews: *"we are stuck together in this ship... either it floats and we all win, or else we sink together!"*.

Table 9.14 Rules of CALs Santa Bárbara, Coyam, Arrayán and Chirre (based on Ostrom, 1990; see Chapter 2, Section 2.5)

RULES	**Santa Bárbara**	**Coyam**	**Arrayán**	**Chirre**
Clearly defined boundaries	Membership is clearly defined and its bylaws in effect close it for the indefinite future. Policies actively discourage new members.	Membership is clearly defined.	Membership is clearly defined. While nominally open to new members, joining requires the payment of a large sum of money.	Membership is clearly defined. Legal structure makes it very difficult for new people to join.
Low cost systems for monitoring compliance	Well-defined and efficient monitoring system of compliance with key rules is in place. Rules are well enforced.	Members lack effective monitoring system. Key detailed information is available only to a few members and to external advisors. Rules are defined on paper but seldom if ever applied.	Well-defined and efficient monitoring system of compliance with key rules is in place. Rules are well enforced.	Well-defined and efficient monitoring system of compliance with key rules is in place. Rules are well enforced.
Congruence between appropriation and provision rules, and market conditions	Two different areas: rules governing pricing system are directly and formally based on market signals. Rules governing fixed investments, participation in the internal life and decision-making process, are based on a criterion of equality of contributions and benefits.	*De facto* system of pricing rules whereby those who contribute more, receive less and subsidize those that contribute less and end up receiving more than their fair share. System discourages innovation and encourages free riding.	Two different areas: rules governing pricing system are directly and formally based on market signals. Rules governing fixed investments, participation in the internal life and decision-making process, are based on a criterion of equality of contributions and benefits.	Two different areas: rules governing pricing system are directly and formally based on market signals. Rules governing fixed investments, participation in the internal life and decision-making process, are based on a criterion of equality of contributions and benefits.
Graduated sanctions for non-compliance with rules	With respect to prices received by each member, sanctions are proportional, graduated, automatic and self-enforcing. With respect to participation and other commitments, graduated sanctions are indeed decided and applied by the membership whenever	Sanctions are almost never applied.	With respect to prices received by each member, sanctions are proportional, graduated, automatic and self-enforcing. With respect to participation and other commitments, graduated sanctions are indeed decided and applied by the membership whenever	With respect to prices received by each member, sanctions are proportional, graduated, automatic and self-enforcing. With respect to participation and other commitments, graduated sanctions are indeed decided and applied by the membership whenever

RULES	Santa Bárbara	Coyam	Arrayán	Chirre
	necessary.		necessary.	necessary.
Participation of members in defining and changing rules	Although external advisors have a major influence in suggesting adjustments, the process is transparent and considered legitimate by members. Rules are approved with the active participation of all members. Rules are well-tuned to allow the organization to respond to key market signals.	Members are formally consulted, but in fact key decisions are made by one leader. Formal rules about pricing systems are superseded by *de facto* rules designed and managed by main leader and external advisors. *De facto* system of rules runs counter to what the market is demanding.	Rules are defined with the active participation of all members. Rules are well-tuned to allow the organization to respond to key market signals.	Rules are defined with the active participation of all members. Rules are well-tuned to allow the organization to respond to key market signals.
Low cost mechanisms for solving conflicts	External advisors are 'referees' of last resort, although most conflicts are managed and solved by the organization. The CAL has gone through at least one major internal conflict and managed it very effectively.	Conflicts are not discussed or brought into the open. Leader imposes his will whenever he feels it is necessary, by threatening to resign, an action that would have a severe effect on the organization.	Conflicts are solved by consensus or majority vote through open discussion in periodic meetings.	Conflicts are solved by consensus or majority vote through open discussion in periodic meetings.
External authorities respect the right of members to establish their own rules	External advisors have a very strong influence on the organization. However, on many specific occasions when the majority of members have held an opinion against them on large or small issues, such opinions have been accepted.	External advisors and one leader largely decide all key issues. Opinion of members counts for little.	External authorities do not intervene in the internal affairs of the organization.	External authorities do not intervene in the internal affairs of the organization.

The better milk producers could also 'take over' the organization and expel the free riders, as in fact is happening in the other three case study CALs. However, there are too many poor-performing farmers in CAL Coyam, and there is no way the remaining good-performers could finance the CAL without them. Its members are way too heterogeneous in terms of their assets and their productive capacities, the product of an early decision in the formation of this organization. Fully half of them lack the minimum farm size or resources to finance or justify economically the investments required to improve milk quality or the seasonal stability of production. Thus, CAL Coyam is caught in a Catch-22 situation: if only the best-performing members remain in the organization, they will lack the volume of production required to sustain the CAL, and if all the members remain, the organization will not be capable of adjusting to meet the industry requirements.

On the other hand, this CAL has not been capable of making a gradual adjustment because of the power of one single member: the commercial farmer who is the leader not only of the CAL, but of all the CALs in Region X. He has the internal power to impose his personal views on many of his fellow CAL members. And he also has the contacts and political influence to block any externally-induced

efforts to change the internal conditions of the organization, as well as to increase the risk that would be run by any members who attempted to gain control of their organization or to leave to form or join another CAL. On the other hand, this commercial farmer, because of his political influence, can reward the acceptance of the *status quo* by his fellow CAL members through his ability to capture important resources from INDAP and other public agencies. According to some sources, even the dairy firm to which this CAL sells its milk is unlikely to want to start a public political problem by terminating its contract with CAL Coyam.

Hence, one likely future scenario for CAL Coyam is that it will linger on for some time, but that it gradually loses presence and importance as its members' milk production continues to decline. How long this decline will last depends on the evolution of milk prices and on the capacity of the CAL leader to continue to capture public subsidies.

(b) ***CAL Santa Bárbara:*** a solid, highly motivated and innovative group of farmers, reinforced by the influence and support of an equally capable external agent – the private advisory firm.

Thanks to the work of the public advisors, this organization is probably ahead of many CALs in terms of its information and knowledge about future trends in the industry and its capacity to implement the necessary technological and management changes. Decisions are made and implemented rapidly[61] not only because the group is solidly constituted, but also because of the great trust placed in their advisors' recommendations. When an EAC is working in a dynamic and unpredictable market, this is an invaluable resource. For example, this was the only group already thinking beyond the current issues of quality and seasonal stability of production, and beginning to look at alternatives such as the investment in individual and sector collecting tanks in order to ensure further progress once the current industry standards were met.

However, the support of this external agency is only possible thanks to INDAP funding. We saw that when the advisors had to suspend their work even for a few months, the organization rapidly ran into major problems as it tried to keep up the pace to which it was accustomed, without the benefit of the technical and managerial expertise and the contacts and networks supplied by the agency.

This is a major gap in INDAP's policies and instruments: the emphasis and investment in training and learning processes is extremely low. INDAP is pouring millions of dollars into pastures, buildings, equipment, technical support, and so on, but very little into training farmers and farmer leaders and developing learning systems to improve the decision-making capacity of these EACs.

In June 2001, I interviewed Mr. Luis Marambio, who had been National Director of INDAP between 1994 and 2000. Looking back, he rapidly acknowledged that perhaps the most important failure of INDAP during his administration had been its inability to improve what he calls the human capital within the organizations. He stated: *"We assumed that we could buy the necessary professional services. We were wrong. Not only are those top-quality professionals not widely available to work with small farmers, often in remote areas, but even if they were, that would only solve certain needs, but would still leave the organizations highly dependent. We erred in our diagnosis and in our strategy to address this problem. An improved policy in support to small farmers has to place a much stronger emphasis on creating human capital and supporting learning processes inside the economic organizations."*

(c) ***CAL Arrayán and Chirre***: these organizations function with a much greater degree of autonomy from external agents. Of course, they rely on their technical advisors to inform and support many decisions and lines of action, but the lines between the EACs and the advisors are much more clearly drawn.

The drawback is that, compared to CAL Santa Bárbara, these CALs are probably less aware of future opportunities and threats, and are in this sense more vulnerable to sudden market changes. They react

[61] Consider, for example the six months that it took this group to set up and start operating their CAL, with the close to three years that it took the farmers of CAL Arrayán to do the same.

well to what is going on around them today, but their vision is shorter.

On the plus side, these two EACs are less dependent than CAL Santa Bárbara on the flow of public funds to sustain their information-gathering and decision-making processes. Some of their members have acquired knowledge and skills that in Santa Bárbara still reside with the external advisors.