

CHAPTER 8. THE LO OVALLE AND RANCHILLO MILK COLLECTION CENTERS

8.1 Introduction

In Chapters 8 to 12 I analyze 14 EACs in detail. Following Stake (1994), my emphasis is on what can be learned from each case, with no attempt at generalization. The purpose is to identify factors that in each case influence the EAC's performance. Each case study chapter compares a subset of the 14 case studies. The idea is to help the reader visualize more clearly the differences in performance and the importance of the various factors that determine or influence them:

- Chapter 8 analyzes two EACs involved in value-adding and marketing milk, whose clients are medium-size cheese factories.
- Chapter 9 discusses four Milk Collection Centers in the south of the country, each of them a supplier of fluid milk to large dairy firms.
- Chapter 10 deals with three potato-marketing EACs, also in the south.
- Chapter 11 presents the cases of two fresh vegetable marketing EACs, one of them selling to supermarkets in the south, the other one to wholesale markets in the Central region.
- Chapter 12 describes EACs involved in value-adding and marketing raspberries, located in the southern limit of the Central zone.

Since most of the main findings are quite similar for all 14 case studies, I have left the overall discussion to the last chapter in the book (Chapter 13).

In each chapter I describe the context in which these organizations work, their history, how they relate to market and non-market agents, and how decisions are made in the organization. Then I describe these EACs' achievements at two levels: the organizations' economic and financial performance and the impacts on their members' households and farms. I then try to explain these results by looking at different factors such as the households and farms' assets, the EACs' systems of rules, and the networks in which they are involved. I close the chapter with my main conclusions and lessons.

8.2 Method

The method used to select and conduct the case studies is described in Chapter 3, Section 3.5.

Aim	Method/Source of information	Sample size
To understand the main factors conditioning the performance and sustainability of EACs, and to analyze the relationship between institutional and economic performance.	Qualitative case studies, using individual and group interviews with different stakeholders, half-day workshops, analysis of available documentation, and a survey of members and non-members.	16 case studies of EACs involved in milk (6 case studies), potato (3 case studies), vegetable (4 case studies) and raspberry production (3 case studies), processing and/or marketing. Results of 14 case studies are reported.

8.3 Basic description of the Lo Ovalle and Ranchillo Milk Collection Centers

The Milk Collection Centers (CAL, *Centro de Acopio Lechero* in Spanish,) of Lo Ovalle and Ranchillo are in María Pinto municipality, 74 km (about 90 minutes on good roads) from Santiago, and only 25 km from the provincial capital of Melipilla. These CALs are only three km apart. Their legal names are Sociedad Agrícola Lo Ovalle, Limitada, and Agrícola Ranchillo, Limitada. Both are Limited Liability firms.

These two CALs, together with four others, jointly own a second tier EAC called UFOCO Ltda. (*Unión para el Fomento de la Competitividad*, or Union for the Development of Competitiveness). UFOCO provides various agricultural services to the six CALs, their members, and other small farmers in the area. The most important of these services are technical advice (as a subcontractor for INDAP), agricultural machinery, and the supply of agricultural and veterinary inputs.

CAL Ranchillo and Lo Ovalle's core business is to collect, test, cool, and market the milk produced by their members and other small farmers in the area. CAL Ranchillo has 10 members, all of whom are active. It also collects and markets the milk for a few other local farmers. The Ranchillo area has 10 dairy farms, all of whom sell the bulk of their milk through this CAL. In addition to milk marketing, CAL Ranchillo buys bulk agricultural and veterinary inputs and supplies for its members, as well as selling these supplies to other local farmers. Four of CAL Ranchillo's members jointly operate a separate collective enterprise to provide specialized agricultural machinery services to small and medium farmers.

CAL Lo Ovalle also has 10 members, of whom only seven or eight can be said to be active. They also receive milk from 11 other non-member suppliers. The link between the CAL, the community and the farmers of Lo Ovalle is rather weak, as only five of the 19 milk producers in the locality work with the CAL, while five of the members actually live in other localities in a 10 to 15 km radius.

The farmers who make up these CALs were given land in 1977 as part of the final stages of the agrarian reform process. Previously, they or their parents had worked as *inquilinos* (peons) in the large *haciendas* that were later expropriated during the agrarian reform. Hence, their history as independent farmers is only 25 years old.

8.3.1 The CALs' markets

The CALs mainly sell their milk to medium-sized cheese factories in the region. When the CALs were launched, meetings were held with representatives of all the 15 or so local cheese factories, and with SOPROLE, the largest dairy agribusiness in the country and the dominating player in the milk market in the Santiago region. According to the General Manager of UFOCO, the main reason for choosing the cheese factory market was that SOPROLE refused to deal with the EACs and insisted on making individual payments to the members of each CAL. Also, while the cheese factories have lower quality standards than the large dairy agribusiness companies, they pay very similar prices for the milk. In fact, according to the General Manager of UFOCO, if one factors in the lower quality standard, the cheese factories probably offer a better price than the large agribusinesses. More recently, some of the cheese makers have begun offering a premium for better quality milk, and some of the CALs are actually responding to this incentive³⁵.

The grades and standards imposed by the cheese factories are not very stringent. They want a regular

³⁵ However, UFOCO's General Manager acknowledges that only two of the six CALs are capable of enforcing their own quality rules. Diluting milk is the most frequent problem, followed by acidity.

and dependable supply of milk, especially during the winter, and this milk must meet some very basic quality standards: it must not be diluted with water, and it must not be acidic. As they compete with SOPROLE for their milk supply, these factories must offer market prices for the milk they buy.

The most common alternative market for small farmers are the *tarreros*, middlemen who roam the country roads buying milk with few questions asked. Their quality standards are even lower than the cheese factories, but, since there are numerous *tarreros*, the net price they pay is close to the market price. However, *tarreros* operate informally, and do not pay farmers Value Added Tax (VAT - 18%). As a result, farmers who sell to them without a legal invoice cannot recover at least part of the VAT they paid every time they bought an agricultural or veterinary input or paid a contract. During the spring and summer months when milk is abundant and prices are low, these *tarreros* often only buy part of the day's production; the rest is wasted.

Another alternative market would be the large-scale dairy industry, which in this region is dominated by only one player, SOPROLE. This firm will of course pay the market price (baseline price), supplemented by a series of bonuses for sanitary quality, volume, pre-cooling of milk, stability of production during the winter/fall vs the spring/summer, and fat content³⁶. If a farmer can meet all these standards to their maximum level, the final price per liter can be as much as 50% higher than the baseline price. Of course, achieving each of these standards requires important investments, and some (i.e., pre-cooling of milk and bonus for volume) have important scale effects. Hence, small farmers are at a great disadvantage with this pricing system. In addition, SOPROLE has been the least interested of all the medium and large dairy processing firms in working with CALs, and their policy when these EACs were started in María Pinto was that they would collect the milk at the EACs' cooling tank, but would then deal with each farmer separately in terms of payments, quality controls, etc

Clearly then, for these small farmers the cheese factory market has distinct advantages over the *tarreros* and SOPROLE.

8.3.2 The birth of the CALs in María Pinto

The initial stimulus for forming CALs was INDAP's credit and technical assistance programs, in particular INDAP's *Programa de Transferencia Tecnológica* (PTT, Technology Transfer Program).³⁷ The original idea of forming CALs in the María Pinto area came in 1993 from an extensionist working for an NGO acting as the local PTT contractor. She had heard of other CALs being established in the south of the country, also in the context of the PTT. Her idea was supported by a commercial firm (Alfa Laval) that manufactured and sold dairy equipment, including the milk cooling tanks that are the core equipment of a CAL.

At the same time, small farmers in the María Pinto area were actively looking for alternatives to their traditional vegetable cropping systems. There had been an outbreak of cholera in Santiago, and the authorities had banned the production of fresh vegetables in many areas where irrigation water was contaminated (including María Pinto). Dairy farming was an attractive alternative due to the strong local tradition of milk production, as well as the high prices being paid for milk at the time.

Also at this time INDAP started to move away from working with isolated local groups and a traditional commodity focus, towards an emphasis on stimulating 'microregional development' processes by linking larger groups of farmers with specific and clearly identified markets. Diversification away from traditional commodities was another important goal for INDAP at the time.

³⁶ See Section 9.1 in Chapter 9 for a more detailed discussion of the dairy industry in Chile.

³⁷ In fact, each of the six CALs evolved from a local group formed to participate in PTT activities.

In the María Pinto area, milk was chosen for this focus as it was a very attractive economic option, and also because the CAL had identified groups of farmers keen to shift from vegetables into milk production. A group of young INDAP employees designed the María Pinto Microregional Development Project, which was rapidly approved and launched in 1995.

Both case study CALs emerged from the Microregional Development Project. CAL Lo Ovalle was one of the first to be started in 1995, while CAL Ranchillo was the last to be formed, in 1997.

Hence, the stimuli for CALs in María Pinto came from many sources: local communities who already had a basic, though informal organization as a result of the action of a government program, an extensionist who knew of the CAL model elsewhere in the country, a private firm interested in selling its equipment, a crisis in the traditional farming system due to sanitary restrictions imposed by government, and the high price of milk.

8.3.3 The CALs' steps towards independence

INDAP originally contracted the School of Animal and Veterinary Sciences of the University of Chile to coordinate the new microregional project in María Pinto. This decision meant that the NGO behind the initial idea was removed from the area. INDAP felt that the university would provide better technical services, and they wanted the coordinating agency to emphasize not only production technology, but also farm management and entrepreneurship, areas in which the NGO had no experience.

Some of those interviewed for this case study mentioned that INDAP also felt the NGO had developed too strong a sense of 'ownership' of the work in the area, and that this would hamper the active participation of the farmers in the decision-making process within the new microregional project. The policy behind the Microregional Development Projects stated that farmers should have a decision-making role, and that the external advisory agencies would need to establish a contractual relationship with them, something that was not evident in the much more 'top down' tradition of the PTT.

The Microregional Development Project was managed by a board (*Directorio*) consisting of six farmers (one from each of the five existing CALs, plus one from the Ranchillo group that was expected to join the project soon), plus one representative from each of the following agencies: the Municipal government, the university, and INDAP. This board selected a Project Manager and the field staff through a public contest.

It did not take long for differences to appear between the university and the farmers. The latter complained that the university did not present the expense accounts to the board promptly; that the contents of the training workshops were not previously discussed with the farmers and that much of the training was not relevant or useful; and that the university gave greater importance to formal workshops while the farmers preferred to spend their time and the project's resources on other activities, such as field days and veterinarian visits to individual farms. "*They gave us documents, but some of us cannot read, much less these long things*" (a member of CAL Ranchillo). In addition, the farmers resented the overheads charged by the university: "*with that 10% they took, we were able to hire another vet*" (a UFOCO board member).

The tension grew as the university did not react to the farmers' complaints and suggestions. With the support of the project's field staff, the farmers proposed to INDAP that they should take direct responsibility for managing the project, getting rid of the university, or, for that matter, any other external agency. For several months INDAP tried to stop this from happening, as it was felt that the organization and experience of the farmers was not sufficiently strong to take on this challenge without the permanent support of an external agency.

The farmers increased the stakes by creating UFOCO in 1996, to have an organization that could legally take over the contract and manage the project. INDAP could no longer resist the pressure from the farmers, and in August 1997, the coordination of the microregional project was turned over from the university to UFOCO. “*When we took control of the technical assistance, for the first time we had to be responsible for our decisions. When others were in charge, our attitude was ‘they will solve the problems’*” (a farmer member of the UFOCO Board).

8.3.4 The different dynamics between the two CALs

Despite their joint participation in UFOCO, each CAL operates independently. Each is responsible for its relationships with its members and other milk suppliers, and each must negotiate with buyers. The community of Ranchillo – unlike Lo Ovalle – had a very well-established history of collective action, such as building a soccer stadium, improving roads and bridges, and so on. Four of the 10 members have, since 1993, been partners in another EAC supplying agricultural machinery services in the area. According to different people interviewed during the field work, this collective tradition goes back to the 1970s, and the agrarian reform. In addition, Ranchillo farmers were more innovative than Lo Ovalle farmers, and by the time the CAL was formed, several key technologies were firmly established (e.g., a second milking in the afternoon, and giving that milk to local women for their own income-generating projects).

Community life in Lo Ovalle, in contrast, is very weak. Even the most basic form of rural organization found in Chile, the Neighborhood Committee (*Junta de Vecinos*), was only formed there in the late 1990s.

Ranchillo and Lo Ovalle’s different community dynamics came to the fore during the formation of the CALs and the initiation of the microregional project. In Ranchillo, the decision to establish a CAL was discussed at length for two years. Discussions and disagreements ranged from the advantages and disadvantages of investing in a CAL as opposed to other projects, how the CAL would be managed, what would happen with the afternoon milk that was controlled by the women, how to repay the loan for building the CAL and buying the equipment, what type of building and what types of equipment were the most appropriate for their scale of operations and purposes, to whom they would sell the milk, etc. During all this time, INDAP kept putting pressure on the local organization to get the CAL going as soon as possible so that the local group could join the microregional project. However, the group took all the time it felt it needed to make this decision.

By contrast, the future members of CAL Lo Ovalle met each other for the first time a few weeks before having to go to the Notary Public’s office to sign the legal documents to establish their organization. All the work was done by one of the future members (the current president of the firm, administrator and sole employee of the CAL), who knew the other partners from driving a truck for an NGO working in the area. One by one, he contacted a number of potential participants, and after only two meetings, convinced them to help form the CAL. A major argument was that given INDAP’s new orientation (i.e., microregional projects), if they did not join they would have trouble getting credit and technical assistance.

Thus, while these two groups have much in common: a similar and simultaneous origin as independent small farmers in the 1970s; similar locations, agroecological potential, educational levels, farm size, farming systems, access to technical assistance and credit services, relationships with the same network comprising private and public organizations (NGO, INDAP, a private dairy equipment firm, the University of Chile, and, later UFOCO); they differ in their tradition of collective action.

These different traditions are also expressed in the running of these two CALs. While both have a formal *Directiva* for legal purposes, real decision-making takes place, in the case of CAL Ranchillo, at regular monthly meetings, supplemented by extraordinary meetings whenever needed. All those

interviewed agreed that CAL Ranchillo was by far the most independent of all the six CAL in its decision-making, concerning all sorts of issues. For example, they do not use the accounting services of UFOCO, but hire their own accountant so as to have direct control over this information; they negotiate directly with potential buyers; they deal with the repair and maintenance services to keep their equipment working; and they solve internal disagreements and conflicts with no external intervention whatsoever. According to the General Manager of UFOCO, “*CAL Ranchillo almost never requests our assistance*”.

The situation is quite different for CAL Lo Ovalle. All decisions are nominally taken by the President (who is also the administrator of the CAL, as well as its sole employee in charge of receiving the milk each day). He delegates (or tries to) almost all significant decisions to UFOCO, such as calculating and establishing the fee that will be charged to farmers for the services of the CAL, negotiating with buyers, repairing the equipment, and solving conflicts with the members. When the sector was flooded and the road was cut because of heavy rainfall, they sat and waited (losing several day’s worth of milk) until help came from UFOCO and the municipality. Membership meetings are rare; there had been only two in the year prior to the field work.

8.4 Performance and impacts of CAL Ranchillo and CAL Lo Ovalle

In this section I discuss and compare the performance of both organizations at two different levels: (a) their economic and financial performance as businesses, and (b) the impact of CAL participation on members’ households and farms. It will become clear that CAL Ranchillo is a successful organization from both points of view, while CAL Lo Ovalle is not.

8.4.1 CAL Ranchillo and CAL Lo Ovalle’s economic and financial performance

Table 8.1 lists several indicators of CAL Ranchillo’s economic and financial performance in 1998:

- (1) The operational results are modest but positive, as the firm is able to cover all of its costs (operational, administration and financial) with its operational income. Its assets are being used in a very efficient manner, since each peso invested is generating a cash flow of more than seven pesos.
- (2) Its financial situation is very healthy. Almost all of its debts are long term, and it could easily cover its short and long term debts with its own assets.
- (3) Its operational dependency on government subsidies is down to zero.

Table 8.1 also shows CAL Lo Ovalle’s performance for three years (1996-98):

- (1) CAL Lo Ovalle’s operational results are very precarious, as for the three years its costs have almost equaled its income, despite the fact that members have had to make extra biannual contributions to meet the costs.
- (2) As a result, its financial position has deteriorated gradually, although it has been able to pay part of its debts. It has tried to shore up its financial position by resorting to levying additional fees from its members, and by increasing the fees charged to non-members who used the CAL’s services. However, as a result these non-members have been migrating to the nearby CAL Ranchillo, thus further undermining CAL Lo Ovalle’s performance.
- (3) CAL Lo Ovalle does not receive any government subsidies to implicitly or explicitly pay any of its operational costs. This of course is a positive sign.

Table 8.1 Economic and financial performance, CAL Lo Ovalle and CAL Ranchillo

Item	CAL RANCHILLO	CAL LO OVALLE		
	1998	1996	1997	1998
Total income (\$)	125,339	62,928	66,020	69,536
Income (milk sales) (\$)	116,498	62,928	66,020	69,536
Income (agricultural and veterinary supplies) (\$)	8,891	0	0	0
Non operational income (subsidies from public agencies) (\$)	0	0	0	0
Costs (not including depreciation of buildings or equipment) (\$)	121,355	62,955	65,305	70,017
Operational result (\$)	4,036	-26	714	-480
Liquid assets (\$)	22,233	21,928	19,453	15,920
Fixed assets (\$)	15,481	19,824	20,075	23,320
Short term debt (\$)	415	1,678	333	344
Long term debt (\$)	17,709	18,594	16,160	15,290
Patrimony (capital plus operational results) (\$)	14,650	20,073	16,513	14,890
Debts/patrimony	1.21	0.93	0.98	1.03
Income/assets	7.53	3.17	3.13	2.98
Operational result/patrimony	27.55	-0.13	4.32	-3.22
Operational capital (liquid assets – short term debts) (\$)	21,818	20,250	19,120	15,576
Liquidity (liquid assets/short term debts)	53.60	13.07	58.35	46.23

In short, as of December 31, 1998 CAL Ranchillo was a rather successful organization from an economic and financial point of view, while CAL Lo Ovalle was facing a gradual decline and was struggling to make ends meet.

8.4.2 Impacts on members' farms and households

In this section I analyze the impact of these EACs on their members' farms and households in terms of:

- (1) Household income
- (2) Farm profits and production and sales values
- (3) Land use, technology adoption, management practices and yields
- (4) Access to technical assistance and to credit

Household income

Table 8.2 shows that the net annual household income of CAL Ranchillo members is 70% higher than that of their control group or CAL Lo Ovalle members. The net annual household income of CAL Lo Ovalle members is also slightly higher than their control group, but in this case the difference is not statistically significant.

About 80% of the net household income of CAL Ranchillo members comes from household members' on- and off-farm labor, the rest being made up mostly by pensions and government subsidies. In the case of CAL Lo Ovalle members, this figure is only 67%. In all cases, almost all the earned income comes from agricultural sources.

Table 8.2. Income and income composition, CAL Lo Ovalle and CAL Ranchillo (\$, 1998-99 agricultural year)

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-participants	Participants	Non-participants
Net hh income	25,827	15,199	15,446	11,187
Earned net hh income	20,561	9,888	10,377	6,496
Unearned net hh income	5,301	5,091	5,068	4,691
Non-agricultural net income	1,239	1,240	1,285	1,196
Farm net income	19,704	8,931	9,178	5,355

Farm profits, production and sales

CAL Ranchillo members' net farm income is more than double that of CAL Lo Ovalle members, as well as that of its own control group (Table 8.2). CAL Lo Ovalle members' farm net income is also higher than that of the control group, by 70%.

By value, the members of CAL Ranchillo produce about twice as much as any of the other three groups (members of CAL Lo Ovalle, and farmers in the control groups for both CAL). In all cases, seeded forages and annual crops (of which forage maize for silage is a dominant component) make up more than 80% of the output of these farms. Fresh vegetables play a complementary role in these farming systems (Table 8.3).

It is important to also consider the economic performance of milk production. In the 1998-99 season, when prices were particularly low, only the CAL Ranchillo members achieved a positive gross margin for their milk production operations: \$ 0.04/lt on costs of \$ 0.15/lt. All the other groups had losses, of \$ 0.06/lt, \$ 0.04/lt and \$ 0.08/lt, for the CAL Lo Ovalle members, the Ranchillo control group, and the Lo Ovalle control group, respectively. It is important to clarify that these figures include, as part of the direct costs, the opportunity cost of family labor which represents 68% of the total costs in the case of CAL Ranchillo members, 80% for their control group, 77% for CAL Lo Ovalle members, and 77% for their control. While these are indeed costs of milk production, they are also a positive flow when seen from the point of view of the household's total income (Table 8.4).

Since the milk prices received by all these farmers were very similar (around \$ 0.18/lt), the differences in gross margins are explained by the wide differences in the cost of producing one liter of milk: \$ 0.15/lt for the members of CAL Ranchillo, \$ 0.22/lt for their control group, \$ 0.24/lt for the CAL Lo Ovalle members, and \$ 0.25/lt for their control group. These differences in production costs are mainly

driven by yield differences per cow and per hectare, as will be discussed later.

Table 8.3. Gross value of production, CAL Lo Ovalle and CAL Ranchillo (\$, 1998-99 agricultural season)

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-participants	Participants	Non-participants
<i>GVP Crops</i>	7,111	2,488	4,438	2,466
GVP Forages	3,692	2,638	1,912	3,037
GVP Fresh vegetables	1,636	1,231	3,765	2,049
GVP Total vegetable production	12,003	4,517	6,156	5,353
GVP Total animal production system	9,244	4,795	3,595	4,544

Table 8.4. Economic performance of milk production, CAL Lo Ovalle and CAL Ranchillo (1998-99 agricultural season)

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-participants	Participants	Non-participants
Direct costs (\$)	6,418	4,312	4,016	4,786
Gross income (\$)	8,176	3,454	3,013	3,262
Gross margin (\$)	1,757	- 859	- 1,005	- 1,525
Production (lt)	44,355	19,537	17,066	19,032
Direct cost per liter (\$/lt)	0.15	0.22	0.24	0.25
Gross income per liter (\$/lt)	0.18	0.18	0.18	0.17
Gross margin per liter (\$/lt)	0.04	- 0.04	- 0.06	- 0.08

Lo Ovalle and Ranchillo's crop and forage farming systems (for members and non-members alike), are basically oriented to supplying feed to their dairy cattle. Little is sold outside the farm except for vegetables, most of which are sold in Santiago, either directly or through middlemen (*tarreros*) who buy them at the farmgate. Almost all the milk is also sold, and CAL Ranchillo's members generate a gross income of more than double that of CAL Lo Ovalle's members, and much higher than any of the control groups (Table 8.5).

For members of both CAL, nearly all their milk is sold through their organizations, while the non-members sell it on their farm to middlemen. As would be expected from the production figures, the gross income from CAL Ranchillo members' milk sales is twice as large as the other groups of farmers.

Table 8.5. Gross income from sales of agricultural products, CAL Lo Ovalle and CAL Ranchillo (\$, 1998-99 agricultural season)

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-participants	Participants	Non-participants
Crops	1,149	933	2,278	955
Forages	77	88	55	760
Fresh vegetables	1,442	1,119	2,406	1,983
Total vegetable production	2,285	1,094	2,704	2,075

Land use, technology adoption and yields

CAL Ranchillo's members farm much more intensively, using nearly all available land. By contrast, about a quarter on average of CAL Lo Ovalle's members' farm area is not under any production; a much lower intensity of use than Lo Ovalle's members' control group neighbors. One third of the farmland of CAL Ranchillo's members is under annual crops (mostly maize, used to prepare silage for winter feed for the cows), and an additional 50% is under seeded forages. This is a key decision that allows farmers to maintain milk production at a higher level during the winter months, when prices are highest. By contrast, the members of CAL Lo Ovalle are more dependent on natural pastures, which grow little during the winter (Table 8.6).

Table 8.6 Land use, CAL Lo Ovalle and CAL Ranchillo (1998-99 agricultural season)

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-parts.	Participants	Non-parts.
Crops (ha)	2.98	1.02	1.67	1.02
Fruits (ha)	0	0	0	0
Forages (ha)	4.59	3.39	2.91	3.82
Fresh vegetables (ha)	1.61	1.54	2.27	1.59
Agro-industrial fruits and vegetables (ha)	0.5	0	0	0
Natural and improved pastures (ha)	6.5	10.8	6.5	10.3
Forest plantations (ha)	0	0	0	0
Total under production (ha)	9.23	11.83	8.06	11.94

One of the most striking differences between CAL Ranchillo's members and their non-participating and CAL Lo Ovalle neighbors, is the degree to which the CAL Ranchillo participants have adopted technological innovations. While there are basically no significant differences in adoption of technological innovations between the CAL Lo Ovalle participants and their control group, the CAL Ranchillo members have much higher and statistically significant rates of adoption in crop diversification, marketing of agricultural products and inputs, use of new machinery and equipment, changes in construction and installations, crop varieties, use of fertilizers, weed control, improvement of cattle breeds, and introduction of artificial insemination. In nine of the 13 categories of

technological change, the members of CAL Ranchillo show statistically higher rates of adoption than their control group. The CAL Lo Ovalle members, on the other hand, show no significant differences compared with their control, except in marketing of products and inputs (Table 8.7).

These differences in technology use express themselves in the yields. The members of CAL Ranchillo consistently get higher average yields than their control group and CAL Lo Ovalle members, while the latter's yields are very similar to their control group (Table 8.8).

The members of both CAL are somewhat better than their control groups in using several good farm management practices asked about in the survey. In particular, they apparently operate more formally in fiscal terms, since almost all of them are legally registered as farmers and each month file their Value Added Tax (VAT) forms. In the case of the control groups, only about 70% of them show these characteristics. By participating in a CAL, these farmers enter into formal markets, meaning that they have to adapt to new fiscal conditions. From the point of view of the government, this is a positive and valuable result. From the point of view of the farmers, by declaring the VAT paid to them by the buyers of their milk, they become eligible to recover at least a fraction of the VAT paid by them when purchasing supplies, equipment or services (Table 8.9).

Table 8.7 Technological changes implemented in past five years, CAL Lo Ovalle and CAL Ranchillo

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-parts.	Participants	Non-parts.
	Yes %	Yes %	Yes %	Yes %
Crop diversification	53.8	5	6.7	0
Contract agriculture	7.7	10	0.4	4.8
Marketing of inputs and products	76.9	10	60	9.5
Irrigation and drainage	30.8	10	26.7	14.3
Machinery and equipment	61.5	10.5	26.7	10
Constructions and installations	61.5	10	40	14.3
Crop varieties and seed quality	69.2	11.1	40	10.5
Use of fertilizers	53.8	11.1	13.3	10.5
Weed control	61.5	11.1	13.3	10.5
Insect and disease control	38.5	16.7	20	15.8
Cattle breeds	69.2	10	20	9.5
Reproduction of cattle	76.9	10	6.7	9.5
Sanitary management of cattle	69.2	55	60.6	52.4

Table 8.8 Yields, CAL Lo Ovalle and CAL Ranchillo (1999-99 agricultural season)

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-participants	Participants	Non-participants
Silage maize (kg/ha)	32,759	29,000	26,800	29,000
Potatoes (kg/ha)	13,000	12,140	11,400	12,140
Alfalfa (kg/ha)	9,637	9,600	7,550	9,637
Vegetables (kg/ha)	8,400	5,928	5,930	5,958
Milk (lt/cow/year)	5,661	1,790	1,925	1,737
Milk (lt/ha/year)	2,891	1,550	3,546	1,718

Table 8.9 Farm management practices, CAL Lo Ovalle and CAL Ranchillo

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-parts.	Participants	Non-parts.
	Yes %	Yes %	Yes %	Yes %
Legally registered as farmers for fiscal purposes	92.3	70	93.3	71.4
VAT accounting and filing	92.3	70	93.3	71.1
Costs and income records	30.8	30	33.3	40
Holds a bank account	100	100	100	100
Legalized land titles	100	100	100	100
Legalized water titles	100	100	100	100

8.5 Explaining the performance differences

The following factors may explain the differences in performance between these two EACs:

- Exposure to a different set of policy, agroecological or market incentives
- Different capacity of the individual members, in terms of human, financial or physical capital
- Different capacity of the organizations themselves, in terms of social capital or management

However, the first set of factors (incentives) does not differ for these two organizations as they are located in the same area, work within the same policy and institutional framework, and deal with the same products and markets. Hence, the varying performances of these two organizations can only be explained by differences in individual members' farms and households, or in the organizations themselves.

8.5.1 Access to agricultural services

All the participants of these two CALs receive technical assistance from UFOCO. In addition, 38% of

CAL Ranchillo's members receive other technical assistance from governmental agencies. About half of the non-members receive technical assistance from government agencies, while about 15% of them also receive support from UFOCO (Table 8.10).

Table 8.10 Access to technical assistance services, CAL Lo Ovalle and CAL Ranchillo

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-participants	Participants	Non-participants
	Yes %	Yes %	Yes %	Yes %
Tech. assistance from EAC	100	0	100	4.8
Tech. assistance from government	38.5	50	6.7	47.6
Tech. assistance from university	7	0	13.3	0
Tech. assistance from private firm	7.7	0	0	0
Tech. assistance from private advisor	15.4	15	0	14.3

Table 8.11 Payments for technical assistance, CAL Lo Ovalle and CAL Ranchillo

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-parts.	Participants	Non-parts.
Cost to farmer of TA from EAC (\$/yr)	90	0	47	1
Cost to farmer of TA from gov't (\$/yr)	0	0	0	1
Cost to farmer of TA from private adv. (\$/yr)	21	0	0	0

CAL Ranchillo's members pay 100% of the cost of UFOCO's technical assistance services³⁸, while CAL Lo Ovalle's members only pay about 50%, despite the fact that as shareholders of UFOCO their representative must have approved these charges. None of the other technical assistance services are paid for (Table 8.11).

EAC participants are more indebted than non-members. In CAL Ranchillo, seven of the 10 members have debts, averaging \$ 1,939, all of them with INDAP. All CAL Lo Ovalle's members have debts averaging \$ 3,130, nine of them with INDAP, one with the State bank (\$ 2,206) and one with a private bank (\$ 11,028). Less than one-third of the surveyed non-members have debts, and the average amounts are significantly lower than those of the CAL members; all the non-members' debts are with INDAP.

In summary: (a) CAL Lo Ovalle members are more prone to taking out loans, and for larger amounts than the members of CAL Ranchillo; (b) INDAP is the main and almost single source of credit for these farmers; (c) the members of these CALs either have greater access to and/or have a more open attitude towards taking out loans than non-members; (d) even in the case of CAL Lo Ovalle, the

³⁸ To be precise, the share of the cost that is supposed to be paid by the farmer, after the largest share is paid for by a subsidy financed by INDAP.

amounts these farmers owe is very small, almost insignificant, if compared with their assets (Table 8.12).

Table 8.12 Access to credit, CAL Lo Ovalle and CAL Ranchillo (1998-99 agricultural season)

INDICATORS	CAL RANCHILLO				CAL LO OVALLE			
	Participants		Non-participants		Participants		Non-participants	
	N°	\$	N°	\$	N°	\$	N°	\$
Total loans	7	1,939	3	662	11	3,130	4	1,048
Short term loans	5	1,544	2	551	9	1,229	3	1,103
Long term loans	3	1,948	1	882	5	4,676	1	882
INDAP loans	7	1,939	3	662	9	2,356	4	1,176
State Bank loans	0	0	0	0	1	2,206	0	0
Private banks loans	0	0	0	0	1	11,028	0	0

8.5.2 CAL Ranchillo and CAL Lo Ovalle's members' assets

Household characteristics (human capital)

There are very strong similarities between participants and non-participants in terms of the household composition and their sex, age and educational characteristics, both in CAL Ranchillo and CAL Lo Ovalle. The only significant difference is that the schooling of the male members of the CAL Ranchillo households, and in particular that of males between 31 and 45 years of age, is considerably higher than that of the control group (7.47 vs 4.93 years at school for all males, and 10.10 vs 6.33 for 31 to 45 year old males). This means that amongst CAL Ranchillo participants there is usually one person in the household who has an almost complete high school education. The participants in CAL Lo Ovalle tend to have somewhat fewer years of formal schooling than the CAL Ranchillo members, or any of the two control groups; however, none of the differences between the CAL Lo Ovalle control group are significant (Table 8.13).

Physical and financial assets

With respect to land resources, the members of both CAL own around 9 ha on average, with those in CAL Lo Ovalle having slightly larger farms than those of CAL Ranchillo, but those of CAL Ranchillo having a somewhat larger proportion of irrigated land. There is a small local market for land rental and sharecropping, which is used by members of both CAL to slightly increase the area under their management. In both cases, the non-participants own and manage larger land areas than the participants (Table 8.14).

Table 8.13 Household composition, CAL Lo Ovalle and CAL Ranchillo

INDICATORS	CAL RANCHILLO		CAL OVALLE	
	Participants	Non-participants	Participants	Non-participants
Members of household	4.3	4.3	4.3	4.2
Female members	2.3	2.2	2.4	2.2
Male members	2.2	2.1	1.9	2
Members 0-12 yrs	0.6	0.6	0.6	0.6
Members 13-18 yrs	0.2	0.3	0.3	0.2
Members 19-30 yrs	0.4	1	1.1	0.9
Members 31-45 yrs	1.3	0.7	0.5	0.7
Members 45-65 yrs	1.2	1	1.2	1
Members 66+ yrs	0.7	0.9	0.6	0.8
Schooling members 7 yrs or +	6.97	5.96	5.72	6.44
Schooling members 15 yrs or +	7.17	6.11	5.70	6.58
Schooling members 19-30 yrs	12.44	10.38	10.03	10.38
Schooling members 31-45 yrs	10.10	6.33	5.90	7.30
Schooling members 46-65 yrs	4	5.73	4.90	6.37
Schooling members 66 or +	3.78	1.83	2.12	1.83
Schooling of head of hh	5.46	4.15	4.06	4.71
Schooling of spouse	4.53	2.45	3	3.09
Schooling of sons/daughters	6.57	6.23	6.36	5.97
Schooling of other members hh	2.33	2.68	2.82	2.55
Schooling of female members hh	5.30	5.47	5.97	5.97
Schooling male members of hh	7.47	4.93	5.65	5.46
Age of head of hh	59.46	69.85	58.60	62.23
Age of spouse	51.62	34.75	39.06	34.66
Age of sons/daughters	34.69	30.40	28.73	28.95
Dependency ratio	0.52	0.73	0.55	0.69

Table 8.14 Land assets, CAL Lo Ovalle and Cal Ranchillo

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-parts	Participants	Non-parts
Land owned by hh (ha)	8.36	11.08	9.86	11.22
Land taken by hh, shareholding (ha)	0.07	0	0.26	0
Land taken by hh, rental (ha)	1.15	0.50	0.53	0.47
Land taken by hh, other contracts (ha)	0	0.68	0	0.64
Land let by hh, shareholding (ha)	0	0.45	0.40	0.42
Land let by hh, rental (ha)	0	0	0.70	0
Land let by hh, other contracts (ha)	0	0.15	0	0.14
Land under management by hh (ha)	9.55	12.46	10.36	12.53
Irrigated land under management by hh (ha)	6.02	4.52	4.39	4.50
Irrigated land owned by hh (ha)	8.43	7.74	6.99	7.66

In terms of access to main roads and towns, there are no major differences. Houses and farms are between 0.5 and 2.0 km from the main road, and about 10 km from the town of María Pinto. Most farmers have motor vehicles and can reach María Pinto, any of the larger regional cities, or even the capital city of Santiago with little difficulty.

In terms of the value of fixed or quasi-fixed assets, CAL members have less capital than their control groups, due basically to the greater value of non-participants' land assets. The individual interviews conducted during the field work confirmed that participants' farms tend to be somewhat smaller than those of non-participants. Since land is by far the most valuable asset of these farmers, the non-participants have a greater total value of assets than participants (Table 8.15).

Table 8.15. Fixed and quasi-fixed capital assets, CAL Lo Ovalle and CAL Ranchillo (\$)

INDICATOR	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-participants	Participants	Non-participants
Value of buildings and infrastructure	28,117	17,958	16,333	20,386
Value of machinery and equipment	5,869	18,284	6,469	7,746
Value of land owned by household	133,022	187,825	159,000	191,385
Value of livestock	8,527	4,844	3,683	4,713
Total value of physical assets	187,953	234,811	162,458	243,488

Although CAL Lo Ovalle members' total land assets are higher, they are lower than CAL Ranchillo's members in terms of the value of buildings, infrastructure such as milking sheds and livestock. Ultimately the members of CAL Ranchillo seem to have somewhat greater total assets than members of CAL Lo Ovalle, despite their unfavorable position with respect to land. This is probably because CAL Ranchillo members have been able to invest more in non-land assets over time, and this is

reflected in their better economic results and higher income (Table 8.15).

In summary, there are no large differences between the members and the non-members of these two CALs in terms of human and physical capital, with the exception of the higher levels of education of certain categories of Ranchillo household members. Also, there are no major differences in location, access to roads and towns, climate, soil quality or access to irrigation, as would be expected from two communities that are only three km apart. These two organizations have also grown out of the same INDAP-supported development projects. Both communities have access to credit and technical assistance, from the same source and for the same period of time. Finally, the long term history of these two communities is also very similar, as is their origin in the agrarian reform process.

It is therefore highly unlikely that the significantly different performances of these two EAC can be explained either by the set of incentives to which they have been subject, or by the structural assets of their members' farms and households. I will thus now explore the effect of social capital on these differences.

8.5.3 Social capital

I will discuss the effect of social capital on the EACs' different performance from four points of view:

- (1) CAL members' participation in other organizations
- (2) Prevalence of social norms amongst EAC members, such as trust and reciprocity, that could lead to better cooperation
- (3) Rules governing the relationship among members
- (4) Participation of the EACs in networks with public and private agents

Participation in community and economic organizations

CAL Ranchillo members tend to participate in more economic organizations (e.g., machinery services firms) than their control group and CAL Lo Ovalle members. On average, each member of CAL Ranchillo participates in six organizations (economic and non-economic), compared with an average of four for CAL Lo Ovalle members, and two for the control groups.

When asked the open ended question "*What should small farmers do to improve their situation?*", about a third of the CAL Ranchillo members and both control groups spontaneously mentioned participating in or forming economic organizations, while none of the CAL Lo Ovalle members mentioned this strategy.

The participation of CAL Ranchillo members is significantly higher in organizations dealing with irrigation projects, soil conservation, pasture improvement and marketing of agricultural supplies. There is also a very high level of participation of women from the CAL Ranchillo households in projects and organizations that pursue economic objectives (including some, such as cheese-making and marketing using the afternoon milk, that put them in direct conflict with their husbands over the control of that resource). About 30% of the CAL Ranchillo members hold leadership positions in these other economic organizations. While the members of CAL Lo Ovalle also participate in many of these organizations, the degree to which they do so is not significantly higher than their control group (Table 8.16).

Table 8.16 Participation in development projects and organizations, CAL Lo Ovalle and CAL Ranchillo

INDICATORS	CAL RANCHILLO		CAL LO OVALLE	
	Participants	Non-parts.	Participants	Non-parts.
	Yes %	Yes %	Yes %	Yes %
Organizations or projects with economic objectives:				
Irrigation or drainage	38.5	10	13.3	9.5
Marketing of products or purchasing of inputs	53.8	0	20	4.8
Soil conservation and pasture improvement	30.8	5	20	9.5
Storage of products	15.4	0	6.7	4.8
Youth	0	0	6.7	4.8
Women's	53.8	5	20	4.8
Asociación Gremial	0	0	13.3	0
Cooperative	0	0	13.3	4.8
Held leadership position in any of the above	30.8	10	14.3	13.3
Organization or projects with social development objectives:				
Neighborhood Committee	76.9	50	66.7	47.6
Sports, culture and recreation	46.2	40	38.1	46.2
Housing or local improvement	0	5	0	4.8

Participation in non-economic community organizations is similar across all the categories of households (members of both CALs and their control groups); participation is particularly high in the Neighborhood Committees and in sports and recreation organizations (Table 8.16).

Despite the very favorable results discussed in Section 8.4.2, between one-fifth and one-third of CAL Ranchillo members consistently feel there are few benefits of EAC membership. This proportion increases to more than 60% when asked about impacts on prices and production costs (Table 8.17). This negative view is based on the downward trend in milk prices that started after the CALs were launched. The cost and income surveys confirm that accessing the market through these EACs has not influenced the average milk price. In the meetings held with CAL Ranchillo members, they expressed their frustration at not being able to extract higher prices. In fact, they mentioned that prices had dropped substantially since they had started their organization (due to market trends throughout the country). As one member of CAL Ranchillo put it, *"this has been our failure."*

In their opinion, the middlemen (*tarreros*), faced with the competition of six CALs in the area, immediately matched their prices. Since they operate without declaring VAT, these *tarreros* can easily match the net prices that the CALs pay their members and suppliers. Hence, the CAL members complain that they are performing an unrecognized public service for local farmers, who see their prices go up without having to go through the process and costs of organizing. They say that without the CAL, the *tarreros* would immediately lower their prices again, because an isolated small farmer does not have any other market in which to sell their milk.

CAL members cannot understand why the tax authorities do not control the *tarreros*; if they had to pay taxes, they would have a harder time competing against the EACs: “*The SII (Internal Revenue Service) actually checks more on us than on the tarreros, because it is easier since we are always here*” (a UFOCO board member).

CAL Ranchillo members have a more optimistic view of the benefits of EAC participation when asked about diversification in crop and animal production, farm improvements, improved quality of life for the women in the household, and improved relations with the neighbors. In addition, most CAL Ranchillo members are also optimistic when they are asked if, in general, EAC participation has led to their doing better as small farmers (Table 8.17).

One of the main conclusions of a meeting held with six of the CAL Ranchillo members was that being part of the CAL made them feel “*more secure.*” When asked to specify why, four things were mentioned: without the CAL, the *tarreros* would lower prices; the *tarreros* would also not pick up the milk some days, as often happens during the spring and summer months; being organized makes it easier to access other public programs, such as credit from INDAP or subsidies to improve pastures; and by being organized they have been able to undertake other common projects, such as buying agricultural inputs together, which helps to reduce costs.

These general trends are more or less the same for CAL Lo Ovalle. Many members do not believe that EAC participation has led to better prices or to improved product marketing. This was one of the main conclusions of a meeting I held with five of the CAL members: “*Our profits have decreased because the price of milk is down, while our costs have increased because we are now paying the Chilean \$ 9.4 million (around \$ 20,000) loan we took to build the CAL.*”

However, in contrast with the members of CAL Ranchillo, CAL Lo Ovalle members were much more positive when asked about the effect of participation on improving relations with the government, in particular at the municipal level. This probably reflects the fact that for the first time the Lo Ovalle area has a functional organization, allowing them to tap into certain municipal funds and services. On the other hand, the members of CAL Lo Ovalle are less optimistic about the effects of EAC participation on farm improvements, improved quality of life for women, their performance as small farmers, or their future as small farmers (Table 8.17).

In a group meeting CAL Lo Ovalle members listed the following benefits of CAL membership: access to UFOCO technical assistance; a secure outlet for their milk (“*during the spring and summer, the tarreros frequently refuse to take all the milk, and some days they don’t take any at all*”); and access to a number of subsidized INDAP programs (pasture improvement, etc.)

The same questions were asked to the CAL Ranchillo and CAL Lo Ovalle control groups who had participated in an economic organization of some sort. Their view was much more pessimistic than the CAL members; most denied that the economic organization in general would be of value for 11 of the 15 questions, and in the remaining four, the percentage of negative responses was between 40% and 49% (Table 8.17).

There is an even stronger contrast between EAC members and non-members in their perceptions about the *costs* of participating in an economic organization. Most CAL members very clearly recognize that participation costs include greater indebtedness, membership fees and giving a cut to the organization from the money received for their milk. Only a minority of the non-members recognize these factors as real costs of joining an EAC (Table 8.17).

Thus non-members have a more pessimistic view of potential benefits, but a more optimistic (and less realistic!) opinion about the costs of engaging in this form of collective action. Even the group which has clearly benefited from EAC participation is pessimistic about the economic benefits.

Table 8.17 Perception of costs and benefits of participating in EAC, CAL Lo Ovalle and CAL Ranchillo

INDICATORS	CAL RANCHILLO				CAL LO OVALLE			
	Participants		Non-participants		Participants		Non-participants	
	Not true %	True %	Not true %	True %	Not true %	True %	Not true %	True %
Benefits:								
Improved household income	23.1	46.2	45	25	20	53.3	42.9	28.6
Improved yield and production	23.1	46.2	60	30	20	60	57.1	33.3
New crops and livestock	38.5	53.8	75	15	33.3	33.3	71.4	14.3
Improved marketing of products	38.5	30.8	65	20	46.7	26.7	61.9	23.8
Improved prices of products	69.2	23.1	70	20	53.3	13.3	66.7	23.8
Lowered production costs	61.5	23.1	60	10	33.3	33.3	57.1	9.5
Farm improvements	23.1	69.2	70	10	26.7	53.3	66.7	14.3
Improved quality of life for family	23.1	38.5	45	35	33.3	40	42.9	38.1
Improved quality of life for women	30.8	53.8	45	40	33.3	40	42.9	38.1
Improved quality of life for youth	38.5	23.1	50	30	33.3	40	47.6	28.6
Optimistic view of the future	23.1	53.8	50	30	26.7	40	47.6	28.6
Improved relations with government agencies	46.2	38.5	40	20	20	33.3	38.1	19
Improved relation with municipal gov't	53.8	23.1	55	20	20	53.3	52.4	23.8
Improved relations with neighbors	30.8	61.5	55	30	13.3	66.7	52.4	33.3
Doing better as small farmers	30.8	61.5	50	25	33.8	40	47.6	28.6
Costs:								
Incurring debts	15.4	61.5	60	15	20	40	57.1	19
Membership fees	15.4	69.2	55	20	26.7	53.3	52.4	23.8
Greater risks in agriculture	38.5	23.7	70	10	26.7	20	71.4	9.5
Loss of time in meetings	15.4	38.5	55	10	33.3	26.7	52.4	14.3
Share of product prices taken by organization	7.7	76.9	70	5	20	66.7	71.4	4.8
Worsened relationships with neighbors	76.9	7.7	80	0	60	20	78.8	3
Some take advantage of the rest	7.7	61.5	40	35.5	33.3	53.3	42.9	33.3
Less trust in the future	53.8	23.1	50	25.5	20	46.7	52.4	23.8

Note: The difference between 100% and the sum of 'true' and 'not true' answers, is due to response of "More or less" and no response

Social norms that foster cooperation

As discussed in Chapter 2, the literature on social capital highlights two important social norms that facilitate cooperation and collective action: trust and reciprocity.

When asked whether the CALs tend to benefit a minority or majority of members, about 50% of the farmers in all the groups answered that they benefit a few or none. Surprisingly, the CAL Lo Ovalle members have a more optimistic view of how widespread these benefits are (Table 8.18).

When asked about trust and reciprocity, very sizable majorities (around 70 to 80%) in all groups thought that one should not trust most people, and that most individuals only care about themselves, rather than being concerned for others. Again, the Lo Ovalle members were more optimistic about the likely behavior of other individuals (Table 8.18).

A majority of the EAC members, to a much greater extent than non-members, thought that some of their partners would take advantage of others, given the opportunity. This perspective might be expected in the case of CAL Lo Ovalle, but is surprising in the case of CAL Ranchillo, with its long history of collective action (Table 8.18). Apparently, within the CAL Ranchillo group there has been some tension between some of the members; however, according to several of the people interviewed, this has been going on for a long time and *“it does not affect us, because we know we have to be frank and open in our discussion, we try to reach consensus, and if we can’t, then we vote and we accept the decisions”* (CAL Ranchillo member).

The somewhat greater degree of trust amongst the CAL Lo Ovalle members recorded in the survey was confirmed in the meetings with members of both CAL. The members of CAL Lo Ovalle repeatedly emphasized their great trust in the President-Administrator of their organization. In fact, during the individual interviews prior to the meeting, all the CAL Lo Ovalle members spontaneously gave the same explanation when asked why they did not meet frequently or why was they were not more involved in the management of the CAL: *“The Administrator is always there and he is perfectly well informed... He is a very honest person... Whenever he needs us, he calls us and we meet... He is a member just like any of us”*. Even the Administrator’s nickname, ‘Uncle Pedro’, reflects this high degree of trust.

The members of CAL Ranchillo take a different approach. They demand to be informed, review all major issues together, are informed in detail each month about costs and income, regularly monitor the quality of milk supplied by each member, etc.

What I find, then, is that trust is operating in CAL Lo Ovalle as a form of perverse social capital: it leads to complacency, replaces monitoring rules, and it conveniently justifies the members’ reliance on the efforts of a single individual. On the other hand, in CAL Ranchillo we see that a lower degree of trust, probably due to personal differences among the dominating personalities in the group, has resulted in strong monitoring and clear rules that are enforced when necessary. As one member of the group put it during an individual interview when explicitly asked if he trusted his fellow members *“We do not need to have trust, because we all know what is going on, and each one knows the consequences of his actions”*.

Networks

An EAC operates in the context of a network of formal market and non-market exchanges. In fact, EACs can be said to be *co-produced* (Evans, 1996) through the interaction of a set of private and public agents. The birth and performance of these two CAL can be explained by the interaction of favorable ideas, trends and/or actions by markets, governments, intermediate organizations (such as NGOs), rural communities and individual farms and households (Table 8.19).

The high milk prices (pull factor) and the sanitary restrictions to vegetable production (push factor),

Table 8.18 Trust and reciprocity, CAL Lo Ovalle and CAL Ranchillo

QUESTION	CAL RANCHILLO				CAL LO OVALLE			
	Participants		Non-participants		Participants		Non-participants	
Ease of organizing with neighbors, compared to 10 years ago	More difficult %	Easier %	More difficult %	Easier %	More difficult %	Easier %	More difficult %	Easier %
	7.7	76.9	30	50	13.3	46.7	28.6	52.4
Household's degree of participation in organizations compared to neighbors	Less %	More %	Less %	More %	Less %	More %	Less %	More %
	30.8	23.1	45	20	26.7	20	42.9	23.8
Community and farmers' organizations are useful	Never or almost never %	Almost always or always %	Never or almost never %	Almost always or always %	Never or almost never %	Almost always or always %	Never or almost never %	Almost always or always %
	15.4	76.9	5	75	20	80	19	76.2
For you and your family, participation in organizations is...	Waste of time %	Beneficial %	Waste of time %	Beneficial %	Waste of time %	Beneficial %	Waste of time %	Beneficial %
	15.4	53.8	10	80	13.3	66.7	9.5	81
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 %
	46.2	46.2	55	45	40	60	52.4	47.6
Can you trust most people?	No %	Yes %	No %	Yes %	No %	Yes %	No %	Yes %
	61.5	30.8	75	25	46.7	46.7	76.2	23.8
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 %
	76.9	23.1	80	20	46.7	26.7	81	19
Most people...	Take advantage of others %	Try to be fair %	Take advantage of others %	Try to be fair %	Take advantage of others %	Try to be fair %	Take advantage of others %	Try to be fair %
	38.5	46.2	65	30	46.7	40	61.9	33.3
Has your situation as small farmers compared to 10 years ago...	Worsened %	Improved %	Worsened %	Improved %	Worsened %	Improved %	Worsened %	Improved %
	23.1	53.9	35	60	53.4	26.7	33.4	57.2
In the next 10 years, will your situation as small farmers...	Worsen %	Improve %	Worsen %	Improve %	Worsen %	Improve %	Worsen %	Improve %
	7.7	53.8	25	50	13.3	40	23.8	47.6

Table 8.19 Networks in the formation and performance of CAL Lo Ovalle and CAL Ranchillo

AGENT	CAL RANCHILLO	CAL LO OVALLE
Government	INDAP creates incentive with 'Microregional Development' programs that broke away from the traditional objective of supporting increased production and yields and emphasized market-orientation and diversification of small-scale agriculture. The promotion of EACs was a key objective of such policies. INDAP also had the necessary instruments to provide technical and financial support to these projects. María Pinto's Municipal Government led by a reformist mayor whose political support base included small farmers, created political opportunity. Health authorities restricted vegetable production in the María Pinto area due to a cholera outbreak, thus creating a sense of greater urgency for the diversification of production.	
Intermediate agents	The NGO INPROA, the private firm Alfa Laval, University of Chile and UFOCO, acting at different times, provided political leadership (in the sense of questioning the <i>status quo</i> and presenting alternatives), organizational models (based on the experience of the CAL in the south of the country, in turn 'imported' into Chile by a university in the mid-1980s), technical and organizational expertise, resources (e.g. equipment donated by Alfa Laval for an initial demonstration CAL), and access to networks (initially to other farmers' groups in the region that were also working with INPROA, government agencies, dairy firms, etc.)	
Markets	In the mid-1990s increased real income in Chile heightened demand for dairy products and led to a shortfall in supply, resulting in very high farm-gate prices for milk, as well as in strong competition among major firms to increase their share of milk supply. This made cooling tanks an attractive technology from the point of view of the large dairy industry firms, because that reduced the mobility of suppliers from one firm to the next. At the same time, due to health and sanitary constraints, the market for vegetables from the María Pinto area was particularly poor.	
Community	Ranchillo had a long tradition of community-based collective action, often for non-economic objectives (e.g., building a local soccer stadium). There was a group of farmers already involved in collective action with economic objectives. All members are neighbors in the same small village, with families who had fought together during the agrarian reform. A fairly homogeneous group.	Future members of the CAL did not even know each other well before being called together to form a CAL. A very heterogeneous group (age, income, residence...).
Individual farmers	Forward-looking, better educated, younger and innovative farmers, who had already implemented changes in their farming systems.	Traditional farmers, several of whom had major sources of income other than milk production.

created *market incentives* for changing the *status quo*. Government (INDAP and the municipal government) also contributed to these incentives by designing policies that:

- (1) created the *political opportunity* for small farmers to act collectively, by making this an explicit public objective and by implying that groups who became organized would get preferential access to assets such as credit, technical assistance and other subsidies (in the case of farmers), and contracts (in the case of the NGO); and,
- (2) channeled *resources* which lowered the costs to farmers and intermediate agents for acting collectively.

Intermediate agents (the NGO INPROA and the private firm Alfa Laval, and later the University of Chile and UFOCO) provided:

- (1) *political leadership*, by showing how farmers could actually challenge the *status quo* represented by their dependence on a disappearing vegetable market and on the *tarreros*;
- (2) *models* of organization, by bringing the experience of the more advanced southern CAL to María Pinto;
- (3) *knowledge* and technical expertise, in the form of advice given to the farmers by Alfa Laval for designing the first demonstration CAL;

- (4) *resources*, in the form of donations of equipment for the CAL;
- (5) access to *networks*, since it was the extensionist from INPROA who provided the link with the municipal government, INDAP, FOSIS and the regional government, all of whom contributed political support and resources to get the CAL started.

All of these factors were present in both case studies. The main difference between Lo Ovalle and Ranchillo is that the latter had a functional social group with a well-established history of collective action, both in the economic and non-economic domains. How much of this was due to the better educational levels of the Ranchillo members' households, and how much they achieved this better education because of the local progressive environment, is a chicken-and-egg question.

In the interviews and workshops with the CAL Ranchillo members and several outside informants familiar with the experience, it soon became apparent that the outcome of that long history of collective action was more than just a new soccer field or brand new equipment for harvesting and bailing hay. It was also a catalytic community group, i.e. a set of individuals who could work collectively guided by explicit and implicit rules that emerged as very important byproducts of their previous collective activities. I return to this system of rules below.

There is no such functional group in the history of CAL Lo Ovalle. In fact, at the beginning there was almost no group at all, but rather an artificial and perhaps quite accidental collection of individuals who shared little more than a common interest and a common set of incentives. The group in this case is replaced by an energetic individual.

Systems of rules

The rules guiding the conduct and action of the EAC members can be described according to the conceptual framework proposed by Elinor Ostrom (1990). In Chapter 2, Section 2.5, I have discussed in detail how these systems of rules condition the performance and sustainability of EACs. Table 8.20 summarizes much of the information collected through the individual interviews and group meetings.

It is quite evident that the institutional performance of these two groups is conditioned by the way in which the organization was formed. CAL Ranchillo is an example of 'an established group starting a new project', as opposed to CAL Lo Ovalle, which is 'a group established to meet the needs of a pre-existing project'. From the interviews and workshop with CAL Lo Ovalle members, it seems that the main factor holding this group together is their debt with INDAP. In the case of CAL Ranchillo, the individuals share a vision for a long-term development project, and they see this CAL as one step in that direction.

My aim, however, is to explain how these different systems of rules affect the CALs' economic performance, as well as their impact on their members' households' income.

CAL Ranchillo's operation is characterized by three important facts:

- (1) Most of the milk it markets (68% in December 1998) is produced by its own members.
- (2) The average productivity of its members is 216% higher than the non-members'. In fact, the interviews and workshops revealed that members' productivity has increased over the past three years, whilst non-members' productivity has remained constant and may even be decreasing as they drop some technologies as milk prices fall.
- (3) The rules guiding the calculation of service fees for members and non-members ensure that members always receive a higher net price per liter than the net price paid to non-member suppliers.

The situation in CAL Lo Ovalle is quite different:

- (1) The total contribution of members to the amount of milk processed and marketed by the CAL has steadily decreased from 79% in December 1995, to 59% in December 1998. In fact, during the winter of 1998, most milk was supplied by non-members.

Table 8.20 Rules of CAL Ranchillo and CAL Lo Ovalle (based on Ostrom, 1990)

RULES	CAL RANCHILLO	CAL LO OVALLE
Clearly defined boundaries	Membership is legally defined in the organization's bylaws. All members are active. Rules governing fees and charges favor members over non-members.	Membership is legally defined in the organization's bylaws. Only a fraction of the members is active. The organization is highly and increasingly dependent on non-member suppliers of milk. Rules governing fees and prices do not favor members over non-members: non-members get the same services, at the same cost, and without having to take any of the risks involved in collective action.
Low cost systems for monitoring compliance	Careful and permanent monitoring of the quality of milk supplied by each individual member. Monthly meetings in which members discuss different technical and administrative topics, review incomes and costs, plan new projects, or discuss the position of the CAL vis-à-vis external agents such as UFOCO or INDAP. External accountant keeps records and prepares monthly reports that are posted on a bulletin board outside the CAL.	Sporadic meetings (<i>"whenever the Administrator needs to, we meet... since he sees us each day, he can also inform us of important things"</i>). Main meetings are when the buyer wants to discuss the price of milk. They monitor quality of milk only in response to serious complaints from buyers. Detailed information about costs, income, quality control is known only by the Administrator, who keeps detailed records in a notebook. (<i>"The Administrator is always here so he knows... since he is also a member, we would sink together if anything goes wrong"</i>)
Congruence between appropriation and provision rules, and market conditions	Clear rules guide payment for services received from the CAL (fee per liter of milk processed and sold) and for paying the loans that financed the investment (fixed fee per member). Members and non-members are charged the same fee for the services provided by the CAL and the technical assistance provided by UFOCO, on a per liter basis. Members are charged an additional fee to cover the start-up loan. The gross price paid to members is slightly higher than that paid to non-members. As a result, the net price per liter received by members is 90% of the gross price, while non-members receive 85%.	Rules that establish fees and charges favor non-members over members. The CAL pays the same gross price to members and non-members, but charges widely different fees for the services provided by the CAL and by UFOCO (technical assistance). In addition, members must pay extraordinary fees to pay back the loan that financed the CAL's building and equipment. As a result, both members and non-members end up with a net price that is about 86% of the gross price.
Graduated sanctions for non-compliance with rules	Fines are levied for not participating in monthly meetings. First time offenders get a warning. At the second offence a fine (\$15) is automatically discounted from the milk payments. System of fines for diluting milk supplied to the CAL. The fine increases with repeated offences (\$30 the first time, \$150 the second time, and the third time the person is expelled from the CAL). Only once have they had this problem; the fine was applied and the subject was intensively discussed in several meetings.	The group as a whole pays the costs when milk has become contaminated in the common cooling tank due to actions by individual members. As a result, they lost their buyer once. Some members have not paid the extraordinary fees to repay the loans, and no sanctions have been enforced. (<i>"This is a small group, and if we take measures against one member, they would leave, and in the end we could not survive"</i>).
Participation of members in defining and changing rules	It took two years for the original group to discuss forming a CAL, in particular how to finance the CAL, risks of taking out a loan for the initial investment and how it would be paid, type of building and equipment that would be most convenient and most efficient, what to do with the afternoon milking controlled by the women but needed to make the enterprise profitable (the women refused to let go of this resource, until the group as a whole was able to start other projects controlled by them, like flowers and strawberry production). When the	The bylaws were given to the group by INDAP and were never discussed. Several members say they have never read them. Rules change repeatedly over time. <i>"We do not have rules; we solve each problem as they come"</i> ; <i>"The only rule we have is to pay our loan"</i> (conclusions of meeting with members). Decision-making is basically done by the President-Administrator, who in turn relies on UFOCO staff. <i>"He is one of us, he is here all the time, and if we sink we sink together"</i> . The members explain that this is fine since that is why they are paying an

RULES	CAL RANCHILLO	CAL LO OVALLE
	falling price of milk forced them to raise the service fee, they opted to start new income-generating activities (sales of agricultural and veterinary supplies). According to their bylaws, decisions are taken by majority vote. In practice, <i>“all important things are usually defined by consensus, but a few times we have had to vote”</i> .	administrator, to make decisions, although they do expect him to consult with them <i>“when necessary”</i>
Low cost mechanisms for solving conflicts	Problems are discussed in monthly or, if necessary, extraordinary meetings.	UFOCO managers and staff make all the important decisions and even solve many day-to-day problems, on the request of the Administrator. Conflicts have ended with dissenting members or suppliers leaving the CAL.
External authorities respect the right of members to establish their own rules	Members maintain almost complete autonomy from UFOCO in their decision-making. In fact, they compete against UFOCO in their new business venture (agricultural and veterinary supplies). This group held prolonged negotiations with INDAP before deciding to form a CAL. They imposed their will in terms of the type of building structure and equipment needed, and today the other five CAL in the area recognize these as much more appropriate than those favored by INDAP. This resulted in lower start-up costs and a smaller loan. INDAP provided ready-to-use bylaws prepared by an external lawyer. Members took some articles, but changed many and added some.	INDAP took all the decisions during the formation of the CAL. Almost total dependence on UFOCO even for minor day-to-day problems. When asked to define their relationship with INDAP, the group supports the description provided by one of the members: <i>“INDAP is our father”</i> .

- (2) The average amount of milk supplied by the members has remained constant for four years. This is likely to be an indication that the productivity at the farm level has not changed over time.
- (3) The service fee charged to the non-members has always been between two to three times higher than the members' fee.

Thus in the case of CAL Ranchillo, the system of rules protects the interests of those who are most important to the survival and performance of the CAL itself: its members, who provide most of the milk that the CAL processes and markets. As the system of rules provides clear incentives for the members, their contribution over time has increased, and thus the system reinforces itself.

In the case of CAL Lo Ovalle, the situation is quite the opposite. The rules discriminate against those who are most important to the performance and survival of the CAL: the non-member suppliers. This has two effects: on the one hand, the members free-ride, and thus have little incentive to improve their productivity. On the other, the non-members do not profit to the extent they should, and thus have a strong incentive to look elsewhere.

In 1998 and 1999, these two CALs were threatened by a very pronounced drop in the market price of milk. This presented them with a dilemma: if they did not raise their fees for each liter of milk, they would not be able to afford to operate the cooling tanks or to offer marketing services. But if they raised the fee, they would compound the pressures already facing members due to declining prices. In other words, there was a stark contradiction between the interests of the CAL itself, and those of its members as individual milk producers.

CAL Ranchillo tackled this situation through three measures: (a) launching new business ventures (sales of agricultural and veterinary supplies); (b) reviewing new technology to help increase members' milk productivity, either by increasing yields and/or reducing costs, and; (c) looking for new non-member suppliers to increase the amount of milk processed and marketed. All of these

decisions made sense given the signals they were receiving from the market. According to the manager of CAL Ranchillo, without taking these steps they would have had to increase the service fee charged per liter of milk by 50%.

CAL Lo Ovalle, on the contrary, responded to this challenge by again raising the fees for non-member suppliers of milk. In doing so, the members were effectively saying *“let the non-members pay the cost of the new market trends, and we will free-ride as we have been doing until now”*. In a meeting with CAL Lo Ovalle members, we made the following calculations using records for February 1999: non-members contributed 46% of all the milk processed and sold that month, but their service fees paid 67% of the CAL’s total monthly costs. Whilst CAL Lo Ovalle’s non-member suppliers could probably absorb this fee when prices were high, they could not continue to do so when the market fell. At this point CAL Lo Ovalle’s two largest suppliers left the organization and started selling their milk to CAL Ranchillo.

CAL Lo Ovalle’s inability to enforce its own rules governing the quality of milk also caused them to lose their original buyer. This had a major effect since this person was paying the highest prices in the area (\$0.23/lit compared with an average of \$0.20/lit in 1997). Today CAL Lo Ovalle is left with a buyer who is facing serious economic problems himself, and in fact owes the CAL a substantial amount of money for past milk purchases.

The combined effect of these two problems (loss of suppliers and loss of buyer) is the major cause of the CAL’s poor operational performance.

Another important example of how institutional performance affects economic performance, is the size of each CAL’s debt (and the financial costs). During the early design of each CAL’s buildings and equipment, CAL Lo Ovalle (whose members at that time barely knew each other) accepted INDAP’s recommendation, influenced by the University of Chile’s School of Animal and Veterinary Sciences, that they needed a large cooling tank. *“This is what Alfa Laval said, and we did as told... it was a closed package”*. Today, at best, CAL Lo Ovalle is only capable of using 25% of the capacity of this large tank, but of course they still have to pay back 100% of the financial cost of their investment.

CAL Ranchillo had the internal strength to resist pressures for two years from INDAP and the University of Chile to get the CAL up and running. They observed the design flaws of the older CAL, and members argued among themselves about the wisdom of taking out a loan, and how it could be repaid through milk fees. As a result, they negotiated a cooling tank that was 20% smaller than the one purchased by CAL Lo Ovalle, and also altered the building design to one which was cheaper, more functional and efficient.