CHAPTER 2. CONCEPTUAL FRAMEWORK

2.1 Introduction

This study aims to understand the economic and institutional performance of EACs in Chile and their impact on their small farmer members. This is an important objective because 10 years into a new government strategy for small-scale agriculture - in which EACs figure prominently – there are clear signs of trouble. As will be shown in Chapters 5, 6, and 7, many of these EACs have failed and their contribution to their members' competitiveness and welfare is not as strong as we had expected a decade ago. Understanding the conditions under which these EACs can perform well will inform the debate on how to improve future public policies and programs for small-scale agriculture in Chile.

I have taken a multi-disciplinary approach to this research. This includes various theoretical perspectives on the economic behavior of individuals and firms, on the institutional conditions for economic cooperation, and on the networks and learning processes required for EACs to succeed in their commercial ventures.

Critiques by Niels Röling and colleagues of the linear paradigm of agricultural innovation and Röling's concept of Agricultural Knowledge and Information Systems (AKIS) underpin my analysis of the public policies that facilitated EAC emergence in Chile from the mid-90s, as well as for conceptualizing the networks in which they participate as (potential) multi-agent soft systems (Röling, 1988; Röling and Engel, 1991, Röling and Jiggins, 1998). Closely associated with this theoretical tradition, the notion of social learning (LEARN Group, 2000) has allowed me to interpret the process through which some EACs develop effective networks and systems of rules to govern their own and their members' performance.

From neo-institutional economics (North, 1990, 1996; de Janvry and Sadoulet, 1998, 2001; Stiglitz, 1986; Bardhan, 1989b; Williamson, 1985) I have used the concept of transaction costs to structure my analysis of the market conditions under which EACs can succeed and make a contribution to the economic performance of their members as independent small farmers.

I apply the theory of social capital (Putnam, 1993; Woolcock and Narayan, 2000; Uphoff, 1999) to analyze how the norms, values, attitudes and beliefs that predispose people toward cooperation have affected EACs' perfomance. I also draw on that theory to understand how roles, rules, precedents, procedures and social networks facilitate cooperation and collective action (Uphoff, 1999).

From Ostrom's (1990, 1992, 1999) comparative institutional analysis I have taken the concept of design principles of institutionally robust organizations for collective action, to structure my analysis of EACs' internal systems of rules and of how such rules condition the performance and effectiveness of these organizations.

In the sections which follow I first analyze the limitations of the conventional linear approaches to small farmer agricultural development. I then discuss the market conditions under which EACs can improve their members' farms and the welfare of their households. Next I discuss the roles of multi-agent networks in the emergence and performance of EACs. Finally, I look at how social capital and, in particular, internal systems of rules, affect the emergence and performance of EACs.

2.2 Cochrane's treadmill and the Chilean response

EACs in Chile are part of a broad set of programs to help small farmers escape *"the agricultural treadmill"* (Cochrane, 1958, 1979). This concept can be explained as follows. A large number of farmers produce the same undifferentiated product. None of them is large enough to influence market prices, and all are price-takers. Those who are early adopters of new technologies can raise their productivity and make a windfall profit. The new technologies eventually diffuse to many farmers,

average productivity rises, production levels increase, and prices drop. The main effect of late adoption is essentially to reduce prices, and hence, the profits of all farmers. The cycle goes on and on. Those farmers who lag behind in the continuous adoption of new technologies are unable to compete on this treadmill and are eventually forced out of the market.

Cochrane's theory originally applied to products that face low elasticity of demand. Sunding and Zilberman (2001) argue that late adopters will also be driven out of the market when agricultural commodities have high elasticity of demand. This is because increased profitability caused by the introduction of a new technology will increase land rents, thus reducing the profits of late adopters and increasing those of early adopters.

Ultimately this type of technological change leads to the accumulation of resources by a minority of farmers who have the assets and capabilities to lead the innovation process, while the majority migrates out of agriculture (Sunding and Zilberman, 2001). Firms producing the technologies also benefit from Cochrane's treadmill, since, recognizing the dynamics of adoption, they will adjust their economic behavior accordingly and take advantage of their monopolistic power (Stoneman and Ireland, 1983).

The vast majority of Chilean small farmers produce just a few commodities: wheat, maize, sugarbeet, potatoes, and grain legumes. The very limited support programs for small-scale farming that survived the dictatorship years were totally focused on improving yields. INDAP's Technology Transfer Program (PTT), loosely based on the Training and Visit system, was completely oriented to this goal. Extensionists essentially spent most of their time promoting a few simple technologies (fertilizers and improved varieties, and sometimes, planting dates and weed control practices) that research had identified as solutions to the main yield-limiting constraints of the major crops. Subsidized credit programs provided partial funding to purchase those inputs. Extension and credit were made available to small farmers who were thought to be 'viable' (a term that was explicitly used by public officials until 1990) under market conditions.

The support policies for small-scale agriculture that began to take shape in the early-90s, after the return to democracy, have aimed to help farmers escape Cochrane's treadmill by stimulating their diversification away from undifferentiated products[9].

Röling et al. (1998) and Hubert et al. (2000) have analyzed the symbiotic relationship between Cochrane's agricultural treadmill and the assumption that innovation can be stimulated by delivering to farmers standardized technology packages developed by research systems. They have highlighted the critically important undesirable effects that have resulted from the emphasis on high yields, such as the intensification of the environmental impacts of agriculture, the loss of biodiversity, threats to consumer health, and the disruption of regional economies and rural communities. They have also argued that the conventional linear paradigm of agricultural innovation cannot deal with the complex problems facing many small-scale farmers. Complex problems and objectives cannot be tackled through the adoption of ready-made solutions, but through concerted action involving social learning by a wide diversity of actors.

Such was the task at hand in Chile. Breaking away from the perception of small farmer development involving increasing yields of agricultural commodities, demanded much more than simply transferring a different set of technologies. To begin with, it involved facilitating the emergence of a shared new perspective on agricultural development among a diverse group of actors (farmers, extensionists, researchers, and government officials). It also required networks to be built linking rural communities with market agents (agroindustries, export firms, commercial banks) who were often perceived by small farmers, extensionists and government officials, as threats, rather than potential partners. This effort meant building new types of organizational platforms for new forms of market-oriented collective action; such platforms were not traditional institutions among Chile's rural

[9] This was always seen as a necessarily gradual process as small farmers lacked the resources to make a complete transition out of commodities and into new enterprises, value-adding and marketing activities, and markets. The assumption was that if small farmers take the first step towards a new venture, that - coupled with proactive public policies and support programs - would create the incentives and generate the capacities to sustain the process.

people. It required new concepts and methods to facilitate these processes to be learnt by extensionists who knew how to teach farmers 'how to do' things, but little of how to support communication, learning, and iterative decision-making processes in uncertain environments.

Thus extensionists were no longer expected to deliver ready-made technologies to 'beneficiaries'. They were now expected to engage with local farmers' groups and other stakeholders to identify market opportunities, and to design and implement 'medium-term plans' (with a three to five year horizon) to facilitate concerted action so as to achieve their objectives. The extensionists' 'annual work plans', with their detailed lists of farm visits, demonstration plots, and field days, were simply thrown away. To be sure, the initial alternative designs were still based on the notion that new technical knowledge and leadership 'delivered' to rural communities and organizations would be the key to solving their problems. But it did not take long to learn that this assumption was very wrong. Extensionists and government officials jumped into the fray unarmed, lacking the necessary skills needed for these new circumstances. Even today, this problem continues to have dire consequences.

Yet, only one year after launching the new approach, a review of the 'medium term plans' showed that 42% of the 1,109 small farmers' local groups participating in the extension system were intending to introduce new commercial crops and farm enterprises; 47% were engaged in marketing activities; and 11% had set up the facilities to add value to primary products before reaching the market (Berdegué and Marchant, 2000). A 1997 impact assessment study of the small farmers' extension program using data from that season concluded that 48% of the participants (compared with 25% of the non-participants) had started to diversify their farming systems away from commodity production (Ministerio de Economía and Ministerio de Agricultura, 1998).

To support this process, new programs were created to substantially expand irrigation on small farms (indispensable for the production of vegetables, fruits, flowers, vegetable seeds, and so on); to provide long-term loans and subsidies to finance farm and off-farm investments; to support market studies and the evaluation of investment projects, etc.

Traditional commodities did have one advantage: practically any small farmer acting alone could sell his or her production. This was not so simple when the product was flowers or raspberries, rather than wheat, especially if the farmer wanted to grade, process, package, or label the raw products before taking them to market, or if he or she wanted to enter into long-term contractual arrangements with supermarket chains or medium and large agroindustries and export firms. EACs were needed as the basic organizational platforms for carrying out value-adding activities and accessing the new markets.

I therefore define an EAC as a legally constituted organization whose members or owners are exclusively or mainly small farmers and peasants who control the decision-making process in the organization, which carries out marketing or value-adding[10] activities directly linked (upstream or downstream) to its members' primary production, and whose main purpose is to improve the performance of its members' farms as economic units that engage in market transactions[11].

This definition contains one important difference from the critiques of the agricultural treadmill and the linear paradigm of agricultural innovation by Röling et al. (1998) and Röling and Jiggins (1998). They disagree with the notion of economic competitiveness as a guiding principle of agricultural development. This is not the case in my approach. In my view, achieving competitiveness is necessary

[10] For the purpose of this study, I use the term 'value-adding' in the broad sense of the business strategy and management literature, to include actions along the chain from farm production through distribution, processing and marketing, with the goal of differentiating products for specific market segments. According to this view, value-adding is not limited to downstream (from the farm) processing activities that transform a raw product, as it can also include actions upstream, at the farm level, and downstream, and not only restricted to processing.

[11] Although applicable to Chile, definitions similar to this one have been adopted in other countries, even some with very different conditions. For example, the Committee for the Integration of Peasant Economic Organizations of Bolivia (CIOEC-B) in a recent document demands the development of a legal framework that can accommodate *"all the peasant organizations that are formed to participate in the transformation, industrialization and marketing of rural production."* (CIOEC-B, 2000, p. 2).

if small-scale agriculture is to become a viable social and economic sector in Latin America (Berdegué and Escobar, 1997). Stepping off the agricultural treadmill does not imply doing away with economic rationality (Petit, 2000), but mobilizing, through social learning and adaptive management, those characteristics of small-scale farming and rural communities which can become competitive advantages *vis-à-vis* certain differentiated products and markets.

2.3 Market conditions under which EACs can be effective

Implicitly or explicitly, peasant agricultural development strategies assume that if peasants organize, they will be better off than if they don't. At a general level, this thesis of rural development is correct.

In Latin America, where societies are characterized by such high inequality and exclusion, peasants are subject to economic, social, ethnic and political discrimination (and increasingly in many rural areas given the feminization of agricultural labor, to gender discrimination as well). Any effort to redress this condition requires the state to strengthen the bargaining power of the less favored. We have seen in the past 20 or 30 years that strategies based on direct intervention in the economy were usually hi-jacked by the politically and economically powerful: *"... without political and social empowerment, which is by no means indifferent to economic performance, it is foreseeable that under the new conditions of deregulation and flexibility in production organization, the farmers and the rural poor - without the strength of a democratic organization and participation - will face greater disadvantages resulting from the opening of the economies and the influence of entrenched local powers"* (Gordillo, 1999, p. 3).

Latin American agrarian markets are notoriously imperfect or non-existent. In this environment, the value and productivity of poor people's assets are significantly reduced. It has been shown that farmers' and rural organizations can at least partly substitute for these imperfect or missing markets (de Janvry and Sadoulet, 2001; Stiglitz, 1986, 1989).

It has also been argued that as rural markets become more liberalized and integrated into the global economy, local communities will need to develop new skills for interacting - often impersonally - with a broader set of actors whose decisions and actions will undoubtedly have growing repercussions for their own livelihoods (Berdegué and Escobar, 1997; Bebbington, 2001). Traditional local institutions[12] are unlikely to be able to structure these new interactions. The new rural economic organizations, often closely linked to, or embedded within traditional social structures, provide local communities with the networks required to operate in an increasingly global context.

However, these general statements do not ensure that an individual EAC will always be effective in meeting its members' needs. It is this gap between the general and the specific that my research aims to address.

As the above definition of an EAC makes clear, the purpose of these organizations - recognized as such not only by public policies but also implicitly or explicitly by most farmers and farmers' leaders whom I have talked to - is to improve the economic performance of members' farms as economic units engaged in market transactions. It is important to discuss the market conditions under which an EAC could theoretically achieve this purpose.

2.3.1 Overcoming transaction costs

The first factor to consider is that participating in an EAC is not a cost- or risk-free option. The fact that most farmers in Chile have not joined EACs (Chapter 5) is no accident. Aside from the tangible costs of participation (membership fees and so on), farmers who join an EAC have to evaluate the

[12] Institutions are *"the humanly devised constraints that shape human interaction. They are made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behavior, conventions and self-imposed codes of conduct), and their enforcement characteristics"* (North, 1996, p. 344).

likely outcome of their participation, which in turn depends on the behavior of their co-members. Participation may open new options to the members, but they also lose flexibility in certain areas of decision-making, where 'sovereignty' is transferred from the individual household to the collective. Game theory and the concepts of *"the tragedy of the commons"* (Hardin, 1968), Prisoner's Dilemma (Dawes, 1973) and *"logic of concerted action"* (Olson, 1965), show that under many circumstances individuals' narrow self-interest will undermine collective action. Factors external to the organization also add to the risk involved in participating in a collective action initiative, such as, for example, the volatile nature of certain markets, the consequences of new trade agreements, or the changes in the political climate. The experience of Chilean small farmers' organizations over the past three decades is a reminder of the likelihood of failure, and its serious and enduring consequences.

Core benefits

Thus EACs need to offer clear benefits to members to offset the tangible and intangible costs of participation. Sexton and Iskow (1988) argue that voluntary organizations such as agricultural cooperatives will only be successful if they provide benefits to their members in excess of what is available elsewhere. They also argue that such organizations offer no advantage in the context of a competitive market, i.e., one where there are (a) a large number of buyers and sellers that preclude collusion; (b) no barriers to entry and exit; (c) no product differentiation, and; (d) equal availability of all relevant information to all market agents.

Ruben (1997, p. 315), in his study of land reform cooperatives in Honduras, takes a similar position: *"there is no reason to belong to a cooperative organization if income and employment expectations cannot be satisfied. Cooperative farms are first and foremost economic organizations that should contribute to the satisfaction of the members' objectives"*. Under the conditions of his study, Ruben found that these cooperatives were responses to labor and commodity market failures, and that their principal function was to protect small farmers from risk by offering a set of contractual choices between collective and individual production, or what he calls a *"modernized version of the well-known sharecropping agreement"* (Ruben, 1997, p. 305). Yet Ruben concludes that a competitive market environment is one of the major external factors required for these cooperatives to succeed, and that, on the contrary, market environments characterized by high transaction costs[13] and high risks are a failure factor.

De Janvry and Sadoulet (1998) analyzed a number of disadvantages faced by smallholders wanting to integrate into markets, all of them related to market imperfections:

- undefined or weak land property rights;
- lack of formal collateral limiting their access to credit markets;
- risk coping through costly mechanisms that are ineffective under certain circumstances, such as large shocks;
- lack of insurance markets that drive households into risk management strategies that reduce the return of their economic activities;
- shallow markets with high negative covariation between production and prices;
- high unit costs in market transactions, and
- land markets biased against smallholders.

In addition to these market failures, there are other disadvantages that relate to new markets' standards requirements, with implications for technologies and equipment (refrigerated trucks, special

[13] Transaction costs are *"the costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights and policing and enforcing agreements"* (North, 1990, p.27).

warehouses, processing equipment, etc.), and for knowledge (managers, traders, specialized technology advisors, legal advisors, accountants, and so on). The stronger the market imperfections, the higher the transaction costs faced by small farmers, to the point where they may be driven out of the market altogether and forced to rely instead on non-market institutions.

Holloway et al. (2000) argue that small-scale milk producers in East Africa face large transaction costs that preclude their participation in the milk market. These include: high marketing costs, the dispersion of milk markets, and the high risk of marketing perishables under those conditions. Their study confirms that the establishment of milk collection centers increases smallholders' participation in fluid milk markets, in part by reducing transaction costs. Yet these institutional innovations are by themselves insufficient to catalyze entry into the market, and they need to be accompanied by the provision of other inputs, including infrastructure and assets accumulated by the households.

As transaction costs increase with a specific product and market, one would expect to observe an increasing impact of EAC membership on various household or farm-level indicators. Non-traditional agro-exports are widely considered to have high transaction costs due to complex contractual arrangements, high labor supervision costs, high production and marketing risks, and the need for a plethora of costly inputs. Carletto et al. (1999) studied the diffusion of non-traditional agro-exports in a number of villages in the area of influence of a peasant cooperative. The average time to adoption was three times longer for non-members than cooperative members, and the former tended to withdraw from these crops much sooner than members. The authors conclude that *"the cooperative was thus the fundamental institutional mitigating factor to small holder bias in adopting [non-traditional agro-exports], in a context of transaction costs and imperfect information"* (Carletto et al., 1999, p. 366).

In Chapter 6 I discuss the impacts of membership on members' household and farm incomes, and in Chapters 8 to 12 I explore this through 14 case studies. These analyses will show that an EAC's impact depends on the product and the market. Thus, I will now link the above discussion to the specific products and markets included in my research. Table 2.1 summarizes the main points.

Wheat and potatoes

Table 2.1 shows that of the six products and markets relevant to my study, two (wheat and potatoes) have very low transaction costs, as these markets are among the closest in Chile to being perfectly competitive. Both products are undifferentiated commodities; large numbers of buyers and sellers congregate in their markets; there are no entry or exit barriers for those farmers wanting to trade, even if they have small amounts of product; and information about all relevant market conditions is widely available to all traders.

Given the nature of these commodity markets, what could an EAC offer to farmers to make them choose to sell their harvest through the organization rather than through a middleman? By pooling the production of a number of farmers the EAC could theoretically help them achieve economies of scale in the spot market. But most EACs in Chile are way too small to achieve this goal. A single medium-sized commercial potato farmer, for example, will produce more potatoes than 75 to 100 of the small farmers who typically make up an EAC's membership. To achieve economies of scale, an EAC would need to organize and coordinate the production of hundreds of small farmers. However, if the farmers live in remote and inaccessible areas, it is likely that a very small number of buyers can impose prices that are significantly lower than market prices; under these conditions an EAC will be able to offer some clear advantages.

By and large, however, one would expect farmers to derive few, if any, benefits from participating in EACs set up to market undifferentiated products in these spot and wholesale markets. To make a difference in such a context, an EAC would have to engage in value-adding activities, such as grading, packaging and/or labeling potatoes to sell to supermarkets, restaurants or fast food chains rather than in spot markets. In this case, the situation is very similar to that of fresh vegetable producers discussed

Table 2.1 Factors influencing transaction costs in selected products and markets in Chile

Product traded by EAC	**Wheat**	**Potatoes, bulk**	**Milk, fluid, precooled, with quality control**	**Vegetables, bulk**	**Vegetables, graded, packaged and labeled**	**Raspberries, graded, processed (frozen), packaged and labeled**
Market in which EAC operates	Wholesale, local or regional mills	Wholesale market in main cities outside the region	Large processing plants	Wholesale market in large city in the region	Supermarkets	Processing and export firms International markets
Alternative markets theoretically available to individuals	None	Middlemen who buy on the farm Wholesale market in main cities	Middlemen who buy on the farm Informal retail market in nearby cities with door to door delivery	Middlemen who buy on the farm Wholesale market in large city in the region	Middlemen who buy on the farm Wholesale market in large city in the region	Middlemen who buy on the farm
Mechanism through which market prices are set	International prices, moderated by national price band system. Reference price announced prior to planting season	Supply and demand with thousands of producers and hundreds of buyers	International prices, with charges of collusion between few large firms dominating the market	Supply and demand with thousands of producers and hundreds of buyers	Supply and demand, with price reference given by wholesale market	International prices
Price advantage to farmer of EAC's actual market vs alternative markets for single individual	None	Net price to farmer is higher in alternative market since intermediaries do not deduct value added tax. Advantage is even higher if farmer takes crop to wholesale market	High if EAC can meet industry quality, volume and seasonality standards	No less than 30% to 100% higher	Up to 100% higher	Low due to very high competition for product, particularly if of good quality, and because middlemen do not deduct value added tax
Barriers to individual small farmers accessing EACs' markets	None	None	Very high. Processing firms will only buy precooled, quality controlled fluid milk. Cost of individual cooling equipment is high.	None	Extremely high, due to cost of processing and, in particular, to preference of supermarkets for year-round suppliers.	Absolute, due to cost of processing which requires very large investments

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Cost of obtaining price and market information	Very low to none	Very low to none	Very low to none	High, large daily fluctuations. Very difficult to predict in advance	High, must already be a supplier	Very low to none
Processing costs for EAC product	Not applicable	Not applicable	Fixed costs very high due to investment in equipment	Not applicable	Not too high; could be done with basic equipment and family labor	High due to cost of equipment.
Transportation and marketing costs	Moderate	Production is usually sold on the farm. Can be up to one third of gross price if product is taken to wholesale market	High, especially if using refrigerated trucks which are vital for obtaining best prices	High fixed costs, makes selling low volumes unattractive unless prices are very high	Relatively high fixed costs	Not applicable, produce is sold on the farm
Risk of not selling product in alternative market	None	None	Very high, farmers typically complain of up to 10% losses per year	Very high, produce can be left unsold if there is over-supply that day	Very high, produce can be left unsold if there is over-supply that day	High to very high, depending on quality and location
Perishability	Very low	Very low	Very high, must be sold same day	High, produce must be sold within a few days	High, produce must be sold within a few days	Extremely high as top quality condition can be lost in just a few hours
Cost of enforcing trade agreements in alternative market	None, crop is paid cash on delivery	None if sold cash on delivery. Higher if paid with check	There are disputes over quality control measurements done by industry labs.	None if sold cash on delivery. Higher if paid with check	Moderate. Supermarket often postpones payment and imposes a number of additional costs to its suppliers	None if sold cash on delivery. Higher if paid with check
Credit	Technically, any small farmer can get credit from INDAP. In practice, EAC members have better access. Since 2000 there is also crop insurance which INDAP can build into a loan application. Larger 'small' farmers can get credit from a State Bank or even a private bank, especially short-term loans.					
Professional services	Mostly organized farmers (not necessarily in EACs) have access to technical assistance from INDAP.					
Other services	Many EACs provide additional services such as collective purchasing and delivery of inputs.					

below, but with the added difficulty that the EAC would need to operate in different regions across the country to assure supply throughout the year, a condition demanded by supermarkets and other retailers.

Milk

Under Chile's current industry conditions, small milk producers face the highest transaction costs, as it is virtually impossible for a dairy farmer to access the formal market if his or her milk does not meet certain quality standards. These can only be achieved by investing in equipment that would be prohibitively expensive to anyone without a relatively large scale of production. The alternative market options, such as selling milk in the urban informal market or on-farm to middlemen, are clearly very unfavorable and a farmer forced into these markets is increasingly likely to shift to other crops or enterprises.

Under such conditions an EAC has a clear and significant role. The most important role is to give farmers access to contracts with the medium and large dairy plants (which reduce risk exposure), cooling tanks, and refrigerated delivery trucks. EAC membership then becomes a very attractive option for a small farmer if it can ensure access to these goods and services.

Raspberries

Conditions for small raspberry producers are little different, if slightly better than dairy farmers. While they do have the option of selling their crop on farm to middlemen, their bargaining position is very weak as they must sell their produce the same day it is harvested, or else take a sharp drop in prices as quality deteriorates within hours.

The goods and services that small raspberry producers could not obtain acting alone depend on how far they want to go along the value-adding chain. If they only want to reduce their risk exposure whilst marketing unprocessed primary products, they would need to have a refrigerated warehouse. This is too large an investment for a small farmer with only a half to two hectares of raspberries. If the farmer wants to grade, package, freeze and label his or her produce before selling it to an exporter in order to capture a larger share of the final price, then the investments are even larger. In this case the farmer would need access to rather specialized technical and managerial expertise. And finally, if the farmer wants to export directly to Europe or the USA, then he or she would need to have access to sophisticated financial services, to highly skilled traders and managers, and to links with a whole array of service providers and clients. It is thus very clear that a small farmer needs an EAC as soon as he or she wants to go beyond the very basic step of selling to the two or three local middlemen who may be in the area on the day he or she is harvesting his or her crop.

Vegetables

Fresh vegetable producers are in an intermediate position. Whilst the supermarket chains would pay them much better prices, they are more or less in the same position as milk producers: entry barriers are almost insurmountable for an individual small producer. The farmer in this case would need to be able to sign a supply contract or option with the supermarket. Yet this is nearly impossible for a small producer who can deliver only a relatively small volume of produce during only a few weeks of the year. He or she would also need to have access to grading, packaging, labeling, warehouse and transport facilities, all of which require costly investments. Since the supermarkets only pay their suppliers 60 to 90 days after delivery, the farmer would need credit to finance the operation. Finally, it is possible that the farmer would also need to hire managers and accountants, as well as high quality technical advisors to help him or her produce the quality goods that supermarkets require. Clearly, a

small fresh vegetable producer wanting to reach the more profitable retail markets must operate through an EAC, since none of these goods and services will be provided by the market to an individual small producer.

However, small vegetable farmers supplying the wholesale market often can and do operate alone. For these farmers there are four main advantages to EAC membership:

(1) Most importantly, EACs can set up and finance storage, information, management, and delivery systems that allow the members to better regulate their supply according to the very large price fluctuations that characterize this market, even on a day-to-day basis; that is, an EAC reduces the risk exposure of an individual small farmer in these markets.

(2) An EAC can build or purchase warehouses, delivery trucks, establish a fixed post at the wholesale market in one of the large cities, and pay the staff in charge of managing the marketing operation, thus spreading these high fixed costs across a larger volume of produce.

(3) Because of the greater stability of supply that an EAC can enable, it is more likely to acquire a regular portfolio of clients, a factor that is of great importance if one considers the high rate of unsold produce that characterizes this market.

(4) EACs engaged in the fresh vegetable market can also diversify their clients: they can sell part of their product in bulk to the wholesale market, but they often also process (grade, package, and label) part of it to sell to supermarkets or restaurant chains.

Thus, while a small fresh vegetable farmer supplying the wholesale market can work alone, there are clear benefits to be obtained from EAC membership.

On the other hand, all EAC members in Chile have better access to a number of different support services than unorganized small farmers. Of these, three are most important:

(1) subsidized credit provided by INDAP at preferential interest rates, and with the *de facto* option of defaulting with very low costs or consequences to the borrower;

(2) collective purchase of agricultural inputs. Whilst this does not always mean obtaining a much better price, it normally involves low cost delivery to their farms or a nearby location, as well as perhaps better payment conditions, and;

(3) almost completely subsidized technical assistance from INDAP private contractors.

However, it is important to highlight that access to these services is a relative and not an absolute advantage over unorganized farmers. For example, in the case of credit and technical assistance most INDAP beneficiaries are not EAC members. In other words, joining an EAC gives you a slightly better chance of accessing these services, but it is likely that you could obtain the same or similar support without being a member.

Thus far, the answer to my question is that EAC membership can significantly reduce small farmers' transaction costs by improving value-adding, market integration and increasing the direct benefits they receive. The higher the transaction costs, the greater the advantages the EAC offers. On the contrary, there is little that an EAC can do for small farmers producing commodities to be sold in spot or wholesale markets which are reasonably competitive. This explains why most recently established EACs tend to be engaged in diversifying away from traditional commodities, not only in Chile but in the rest of Latin America as well (Berdegué, 1999).

Other benefits

However, the direct economic benefits from EACs' core marketing or value-adding activities cannot entirely explain why farmers join these organizations. First of all, as the sources of household income and the functions and services provided by the EACs diversify, it becomes more difficult to apply the transaction costs framework wholesale to understand the organization's contribution to an individual household. A model in which one household has one and only one source of income from one agricultural product, and where the full range of tangible or intangible costs and benefits derived from membership in an EAC can be ascribed to that single flow of income (as in Table 2.1), is far too simplified.

In Chile, as for Latin America as a whole, employment and income diversification are increasing among rural households (Reardon et al, 2001; Berdegué et al., 2001). The implication is that under these conditions, EACs can contribute to enhancing other employment and income opportunities available to the household, and this could increase the attractiveness of an EAC's services. Examples of such non-core benefits include buying farm machinery and transport vehicles that are then used by some of the members to sell services to medium and large farms; building or repairing rural roads that not only help the EACs' marketing activities, but which also help local farmers get work in nearby rural or urban communities; rural electrification and communication projects that stimulate new local small non-farm businesses to emerge; accounting and legal support systems to help formalize many local micro-enterprises, in turn increasing their access to credit and to different fiscal benefits; training EAC members in business management skills, which are applied not only to running the farm but to other small businesses; etc.

These indirect benefits stem from two important assets which EACs give their members and rural communities: access to networks linking them to external agents, and greater political power. Both these factors help EACs access services that are only partly used to improve their core activities.

Consequently an EAC can still be an attractive option to a small farmer even if operating in a perfectly competitive market. The farmer may derive little additional benefit from selling his product through the EAC, but he or she may value the access to the other, non-core assets or services provided by the organization. As will be seen in several of the case studies in Chapters 8 to 12, this situation is common in Chile. It means that EACs need rules to ensure that members do not participate selectively in those non-core activities to the neglect of the organization's central business. Designing and enforcing such rules is extremely difficult when the EAC is engaged simply in the marketing of undifferentiated commodities in the spot or wholesale markets.

2.4 Networks and the emergence and performance of EACs

As will be shown in Chapters 4 and 5, even for those products/markets which have high transaction costs, most small farmers have still not joined EACs. Counteracting the effects of imperfect and missing markets does not provide enough incentives to catalyze the emergence of EACs. Figure 2.1 presents a conceptual model that shows that an EAC is part of a network involving many different public and private agents. It proposes that the emergence and performance of an EAC is facilitated by the coexistence of a complex sets of factors provided by several different types of actors. Like all models of its kind, Figure 2.1 oversimplifies reality. But it offers a heuristic device for a discussion of

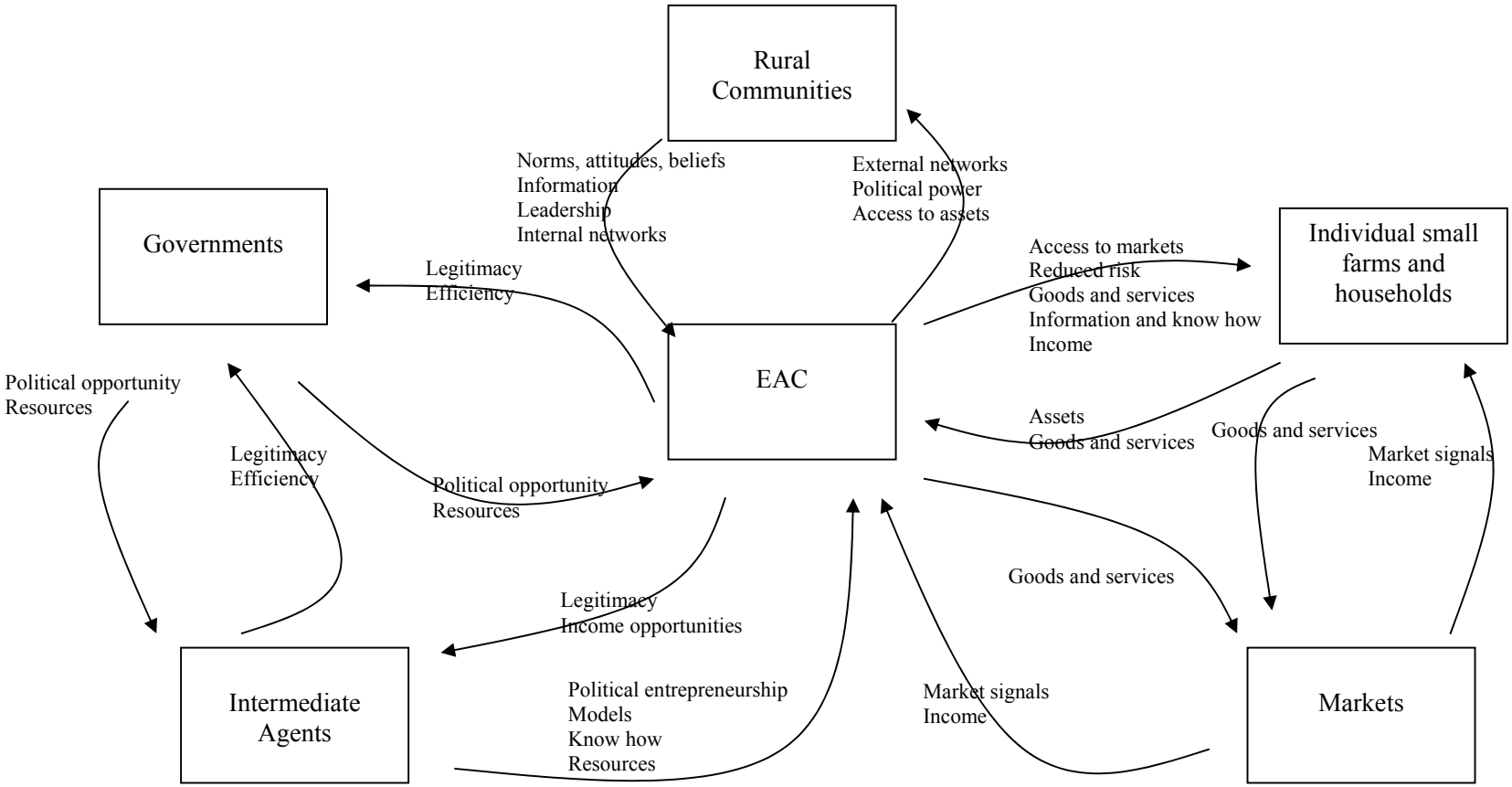

Figure 2.1 Model of networks required for the emergence and effectiveness of EACs

the importance of multi-agent interaction for the emergence and performance of EACs.

Röling's (1988) notion of Agricultural Knowledge and Information Systems (AKIS) can be used to understand these networks. As Röling and Jiggins (1998, p. 304) point out, *"It has become common practice to speak about 'agricultural knowledge systems', i.e., to use a (soft) systems approach for looking at the interaction among the (institutional) actors operating in a 'theatre of agricultural innovation'. Innovation emerges from this interaction and is no longer seen, as was customary in the 'transfer of technology perspective', as the end-of-pipe product of a sequential process. The knowledge system perspective looks at the institutional actors, within the arbitrary boundary of what can be considered the theatre of innovation, as potentially forming a soft system. A soft system is a social construct in the sense that it does not exist. One cannot, therefore, say that such actors as research, extension and farmers are a system. In all likelihood they are not, in that there is no synergy among their potentially complementary contributions to innovative performance, but by looking at them as potentially forming a soft system, one begins to explore the possibilities of facilitating their collaboration and hence the possibilities for enhancing their synergy and innovative performance."*

The model in Figure 2.1 is not a knowledge system in the strict sense of Röling's definition, as it not only involves the social construction and exchange of knowledge, but also of goods, services, and therefore, value. In this sense, I think that the model in Figure 2.1 is more strategic than Röling's AKIS. But, in common with AKIS, it depicts a potential soft system, a platform for potential coordination and cooperation leading to innovation in a given domain of human existence. In the case studies presented in Chapters 8 to 12, I will show that as collaboration and concerted action in these networks become more effective, an EAC's performance improves, while, on the contrary, the failure to construct balanced synergistic relations with public and private actors is a characteristic of failed EACs.

Evans (1996) and Ostrom (1996) have proposed the concepts of 'embeddedness' and 'co-production' to refer to specific ways in which coordination and cooperation can be organized across the public-private divide so as to enhance efficiency, effectiveness and the satisfactory accommodation of potentially conflicting objectives and goals.

In her research on effective public policies and programs in north east Brazil, Tendler (1995, 1993a, 1993b) has provided compelling evidence that cooperation and coordination across different societal divides is key for overcoming the frictions and inertia that hamper so many well-intentioned development efforts. In his analysis of a range of rural and agricultural development initiatives in Asia, Uphoff (1993, p. 613) found that *"in a comparative study of 16 countries ... [those] which had the best linkage between central government and rural communities through a network of local institutions, had the best performance in agriculture and in social indicators."*

In summary, the emergence and performance of EACs requires synergistic relationships between rural individuals and communities, markets, governments, and intermediate agents across a number of social divides. The nature of the new EAC will be greatly influenced by this exchange, i.e., by the relative combinations of the different actors' contributions.

In Figure 2.1, government and markets are sources of *incentives*[14] to small farmers to form an EAC. Rural communities, households, and individuals contain certain *capacities* to respond to these incentives, which are derived from their sets of natural, human, physical, financial, and social *assets*. Intermediate agents (in Chile, largely NGOs and private consultant firms) play a *catalytic and facilitation role.* I will now describe these roles and how they relate to EAC formation and performance.

Government

The most obvious support provided by government agencies is resources channeled through public

[14] Incentives are *"the positive and negative changes in outcomes that individuals perceive as likely to result from particular actions taken within a set of rules in a particular physical and social context"* (Ostrom et al., 1993, p. 8).

programs such as those described at length in Chapter 1. In Chile these resources are often made available through intermediate private agents. A key point is that through their design and implementation, these resources constitute not only *assets* of the EAC, but also sources of *incentives* in that they affect the perceived and the actual costs, benefits, and risk of different options available to the EACs, and thus always favor certain responses and courses of action over others.

In his analysis of the relationship between collective action and politics, Tarrow (1994) concludes that the former is likely to emerge in response to changes in opportunities that reveal potential allies. Collective action of the sort we are describing is a political act, in the sense that it always implies a challenge to the *status quo*. Challenging the *status quo* is stimulated by shifts in ideology, knowledge, power and/or resources (White and Runge, 1995). These shifts counterbalance other factors favoring the maintenance of the *status quo*. By creating a favorable political environment, government officials and agencies acting as political entrepreneurs in effect question the legitimacy of the *status quo* and reduce the uncertainty of the outcomes of collective action.

Thus, a second, less tangible but perhaps more powerful incentive provided by government, has been called by Fox (1996) *"political opportunity."* Political opportunity is generated by proactive public policies and reformist public servants, and it serves the function of *"buffer[ing] the negative sanction that other state actors usually deploy against autonomous collective action beyond the village level"* (Fox, 1996, p. 1090). In the case of EACs, Fox's analysis should be extended to buffering the perceived risks of engaging with new market agents and new forms of market exchange. Government agencies are perceived by the farmers engaged in the EAC as allies that can help them counterbalance the power of markets. As will be seen in the case studies, only the more successful EACs can close the loop, by using their links with market agents to counterbalance the power of the state.

Government agencies derive benefits from their engagement with EACs. First, they gain efficiency, as working with and through local organizations simultaneously expands the reach of public programs, and reduces the cost of their implementation. Second, governments working with EACs expect to gain legitimacy among the rural population, a political objective. Governments and government employees sometimes also derive other less legitimate benefits by supporting EACs, such as undue influence and control over rural communities through political patronage and clientelism; from this follows the importance of effective and successful links with market agents as a counterweight to the power of the state.

Markets

In the previous section we have already discussed how markets create incentives for collective action when transaction costs are high enough to impede or limit individual smallholders' market exchanges. Relative prices linked to different products and markets are also a powerful incentive to challenge the *status quo*, as will be shown at length in the case studies: by observing more favorable production or market options and comparing them with their present practices, farmers are stimulated to change. An example is the case of raspberries (Chapter 12), where small wheat producers rapidly learned about the profit potential of the new crop when it was introduced locally by commercial farmers.

Government and market incentives can of course reinforce or negate each other. In Chile, for example, diversification, new marketing options and value-adding activities really accelerated among small farmers once the main agricultural support programs, and the public policy discourse, shifted their focus away from promoting higher yields in basic commodities. In the absence of this public-market synchrony, small wheat producers wanted to diversify into raspberry production, but their options were limited as long as technical assistance and financial support kept focusing on wheat yields. Yet, when the interests and objectives of the public sector are synchronized with market signals, the response can be phenomenal. For example, in the case of the Milk Collection Centers (Chapters 8 and 9), a shortfall in supply relative to demand led the dairy industry to pay attention to small farmers. The public sector acted rapidly by providing the necessary support to respond to the market demand, with the result that within four or five years about half of the small milk producers in the country had become organized in dozens of EACs.

The two-way arrows between EACs and markets in Figure 2.1 show that their interaction is subject to the rules of market transactions. This seems obvious, but it is amazing how often this simple statement

and its practical outcomes are poorly understood, with the consequences that the reader can imagine. For example, a smallholder who stops selling his or her vegetables to middlemen and instead gains access to more profitable outlets such as a supermarket chain, can only expect to capture the additional benefits if he or she, together with the other farmers in the EAC, are capable of meeting the stringent quality standards that are characteristic of the new market.

The incentives generated through government programs sometimes distort the nature of the relationship between EACs and markets. An example may clarify this point: as explained in Chapter 1, investments by small farmers and their EACs are very often heavily subsidized in Chile[15], and, in addition, there is a long-established tradition of condoning defaulted public loans. Both policies in effect transfer a large share of the economic risk of a given investment project from the farmers to the public sector. Thus they create an incentive to engage in enterprises that have a low probability of success. This policy-driven disassociation between market risks and potential rewards sometimes leads to EACs engaging in what can only be called adventures (as opposed to properly evaluated business-oriented projects), and it explains many of the observed failures.

Intermediate agents

I turn now to discussing the interaction between EACs and intermediate agents. In Chile, these are largely NGOs and private consultant firms working under contract to government agencies to organize and manage the delivery of public services to rural communities and small farmers' groups and organizations.

As mentioned before, the emergence of an EAC is a political act in that it implies social mobilization to challenge the *status quo*. The *status quo* is challenged when a community acts on the perception that the current state of affairs is inefficient, or unfair, or both. Such a challenge implies questioning the present distribution of rights and duties, of costs and benefits; an alteration of power and authority (White and Runge, 1995).

The challenge to the *status quo* will not just come about through dissatisfaction with current conditions; there is also a need for some form of *"political entrepreneurship"* (White and Runge, 1995). Bebbington (1996, 1997) and Berdegué (1999) have shown that generally in Latin America successful cases of local collective action are induced and supported by external intervention, increasingly coming from private commercial and not-for-profit organizations.

Such intermediate agents usually operate by facilitating a social dialogue on the nature of the problem; by providing organizational models and information about alternative solutions; by contributing an ideological, moral or knowledge basis for challenging the *status quo*; by setting performance standards; and by fully or partially offsetting the transaction costs of cooperation and coordination (White and Runge, 1995). In exchange, intermediate agents derive benefits such as social legitimacy which open up new income opportunities.

Individuals

EACs' networks link the organizations to individual farmers, each with certain 'capabilities', or capacities *"to be and act"* (Bebbington, 1999). Capabilities grow out of the 'assets' held by these agents (de Janvry et al., 1991; Bebbington, 1999; Uphoff and Wijayaratna, 2000; Uphoff, 1999): their human, natural, physical, financial and social capital.

An individual's human, physical, financial and natural assets define their *relevant* and *feasible* courses of action. As we will see in the case studies, many farmers choose not to join an EAC because it does not deal with their products or markets (the proposed action is not relevant), or because they cannot

[15] Although compared to the subsidies received by farmers in the OECD countries, the magnitude of the support is child's play. In a recent press conference, the Commissioner for Agriculture of the European Union put the annual subsidies received by USA farmers at $ 11,000 per year, and those obtained by European farmers at *"only"* $ 4,500 per year (source: Agroenlinea.com, August 2001).

afford to participate (the proposed action is not feasible). For these reasons, better-off small farmers tend to participate more in EACs than their poorer neighbors.

If public policies are founded on the vision that EAC membership is always, under any circumstances, better than not being a member, then non-participation by the poor and subsistence farmers can only be characterized as exclusion. But if we acknowledge that deciding to join an EAC involves weighing costs and benefits, and if we accept that costs may sometimes be higher than benefits, then non-participation by the poor can sometimes be a rational and voluntary decision. However, the poor are sometimes excluded involuntarily. For example, in several of the case studies in Chapters 8 to 12, farmers explain that many of those originally involved in forming the EAC did not join because they could not afford the initial membership fees.

It has also been well established that a household's assets influence its perception of risk and its risk avoidance or risk management strategies (de Janvry et al., 1991; de Janvry and Sadoulet, 1998; Ruben, 1997). EAC participation means that members must evaluate the probable behavior of the other participants, as well as the likely outcomes of the various alternatives (White and Runge, 1995). Individual's differences in assets enhance the uncertainty under which this evaluation takes place. As the conditions of uncertainty and the perception of risk increases, all other factors being equal, it is less likely that the individual will choose to participate.

2.5 Social capital and systems of rules

Metaphors such as the *"tragedy of the commons"* (Hardin, 1968), Prisoner's Dilemma (Dawes, 1973) and "*logic of concerted action"* (Olson, 1965) predict that individuals' 'rational choices' will usually undermine collective action institutions. In these theories, collective action aims at the production or consumption of public or common goods, where the cost of excluding non-cooperating individuals will range from very high to infinite (Hardin, 1982). They assume that the incentives to 'free ride' in collective action are such that individuals will do so in order to maximize their own benefits. Since all individuals face the same incentive to 'free ride', under most circumstances no collective benefit will result. These theories are essentially pessimistic about the likelihood of collective action being successful: collective goods usually end in collective tragedies.

As we will see in several of the following chapters, this argument is not without substance. Yet, some of the EACs I studied manage to constrain the pervasiveness of this sort of opportunistic behavior and to achieve their objectives. How do they do this?

The more recent studies of game theorists have identified a number of group situations and characteristics that can lead to successful collective action (Nugent, 1993). The Prisoner's Dilemma situation, in which defection is the dominant strategy of each player, no matter what the other one does, can be avoided when (Bardhan, 1993):

- Assurances can be built into the game so that one player defects if the other defects, but cooperates if the other cooperates
- The costs of monitoring and controlling free riders are low
- The consequences of defection are so bad that either of the players would rather do the work himself if the other does not cooperate
- Actors repeatedly face the same or similar decisions about cooperating or defecting (dynamic or iterative prisoner's dilemma game situations)
- Pre-game communication is allowed
- There are credible threats and commitments to retaliatory actions against non-cooperators and free riders
- Social norms, values, beliefs and attitudes induce cooperation
- Exit options are not readily available

In recent years the concept of social capital has been used to explain social interaction among individuals, groups and communities against the predictions of 'rational-choice' theories.

As with many other concepts that suddenly become fashionable in the development literature, 'social capital' has become a catchword that is used by many with different contents and diverse purposes. It is thus very important to be precise about what is meant by 'social capital' in this book, and for this purpose I have chosen to follow Uphoff's (1999) definitions of cognitive and structural social capitals.

First, it is necessary to highlight that Uphoff links the concept of social capital with the proposition that the resulting social interaction should lead to mutually beneficial collective action. However, as Portes and Landolt (1996) have shown, there are also downsides to social capital. These also apply to the performance of EACs: closely bound groups may exclude new potential participants; strong social networks based on ethnic or village-based identities can constrain exchange with outsiders (Nagengast and Kearney, 1990); roles and precedents may stifle innovation, initiative, and competing leaderships; solidarity and reciprocity can camouflage the interests of the more powerful; trust can weaken monitoring and enforcement of agreements. The social institution of *cacicazgo*[16], which pervades rural Latin America, is perhaps the best example of what Rubio (1997) has called *"perverse social capital."*

2.5.1 Cognitive social capital

Uphoff (1999) proposes the concept of cognitive social capital to refer to norms, values, attitudes and beliefs that predispose people towards cooperation.

The starting point for collective action must be the willingness or predisposition of individuals to commit themselves to such behavior. Röling (2000, p. 10) contrasts social learning, soft systems and overcoming social dilemmas with *"rational choice"* behavior. The former are *"processes by which individual cognitive agents realize their common fate and agree to engage in collective action,"* while the latter induces individuals to act strategically in response to their own individual interests. Collective cognition, rather than rational choice behavior, is needed for *"perceiving, intentional and reasoning individuals to engage in collective action"* to overcome social dilemmas (Röling, 2000, p.12). In this view, effective collective action requires *"shared sense-making, conflict resolution, negotiated agreement and accommodation ... [and] collectively learning about and controlling our own collective behavior"* (Röling 2000, p.35). Röling and Jiggins (1998) state that social learning of new perspectives can lead to consensual decision-making based on the accommodation of interests.

Two social norms (i.e., standards of behavior shared by members of a social group) are recognized in the literature as being particularly important for predisposing people towards cooperation and collective action. These are trust and reciprocity, which are developed through recurrent social interaction (Woolcock and Narayan, 2000; Putnam, 1993).

Reciprocity

The decision to cooperate depends on perceptions of the probable behavior of others. People tend to be cooperative when others are. Reciprocity is a norm of fairness: people are not expected always to cooperate, but must do so when others do so (Sugden, 1984; Coleman, 1988; Bardhan, 1993). The actual behavior of the individual engaging in collective action is influenced by the interaction between the moral limits and social obligations imposed by norms of reciprocity and the logic of self-interest (Bardhan, 1993; Taylor, 1982). Fafchamps (1992) claims that there is no contradiction between solidarity as a moral obligation and subsistence as a right grounded in rational behavior.

Reciprocity is not always balanced, because individuals are linked with each other in a multilayered social system. For example, landless peasants in Haiti contribute a very high share of the labor to build erosion checkdams because of their membership in other labor sharing arrangements, not directly related to the problem of land degradation or erosion control (White and Runge, 1995). The

[16] The social relations built around individuals who hold great power in rural communities and even regions, and exert control and almost domination over social, political and economic life.

expectations and obligations created through reciprocity are exchangeable across areas of activity, as well as over time (Coleman, 1988). Putnam (1993) has shown that repeated exchange over a period of time fosters *"generalized reciprocity*", which is a particularly efficient counterweight to opportunistic or free-riding behavior. Reciprocity, according to Putnam (1993), is the most important of the social norms that facilitate the building of trust.

Trust

Trust, *"the belief or confidence in the honesty, goodness, or skill..."*[17] of another individual or group of individuals, predisposes potential EAC members to engage in collective action because it reduces their uncertainty about others' probable behavior, or about the rewards of collaboration. The existence of trust may be particularly valuable when formal institutions for protecting and enforcing one's rights, such as efficient judicial systems, are not readily accessible (Lyon, 2000). Trust promotes civic engagement (Putnam, 1993; Evans, 1996) by helping build *"mutual interdependence"* (Bardhan, 1993), *"interdependent utility functions"* (Uphoff, 1993), or *"welfare interdependence"* (White and Runge, 1995); concepts which are well captured in Bates' (1987) proposition that *"in a world in which there are prisoners' dilemmas, cooperative communities will enable rational individuals to transcend collective dilemmas."*

Uphoff (1993, p. 609) stresses that at the local, community and group levels, people have *"face-to-face relationships and are likely to have multistranded connections - as members of a common church, as buyers at the same market, as relatives through extended families, etc. This provides a better basis for collective action."* In a totally different context - modern Italy - Putnam (1993, p. 167) also states the same: *"Spontaneous cooperation is facilitated by social capital."*

Cooperation is also made possible by the fact that collective action institutions solve different problems for different individuals. Ostrom (1996) explains that successful co-production (a form of public-private cooperation) encourages citizens to develop other horizontal relationships, with many positive spillover effects for other activities. Collective action institutions can address multiple needs because the *"utility function"* of each member is the result of a large set of arguments, displayed over a time dimension which is not necessarily the same as that of the collective action itself.

2.5.2 Structural social capital

Structural social capital comprises the roles, rules, precedents, procedures and social networks that facilitate cooperation and collective action (Uphoff, 1999).

Structural social capital facilitates the formation of EACs because it reduces the transaction cost of the exchange by simplifying the processes of finding information, negotiating and enforcing agreements, and protecting the rights of the participants. Social networks reduce the cost of acquiring information. Roles, rules, and precedents built over repeated social exchange limit the set of choices available to the individuals and reduce the complexity of decision-making in uncertain environments. Precedent, i.e., practical knowledge about the potential benefits of cooperation, derived from previous practical experiences of working with and through local organizations and institutions, is one of the most powerful motives for an individual to cooperate in collective action (Walters et al., 1999).

As will be shown in detail in Chapters 8 through 12, rules are an element of structural social capital of particular importance to the development and performance of EACs, and thus they should be discussed in detail.

Rules

Ostrom (1990, 1992, 1999), and Ostrom et al. (1994a, 1994b) have analyzed a large number of collective activities at different levels. They found that some systems were more institutionally robust in that the day-to-day operational rules *"have been devised and modified over time according to a set of collective-choice and constitutional-choice rules"* (Ostrom, 1990, p. 89)[18]. According to their

[17] Cambridge International Dictionary of English.

[18] Operational rules guide decisions of appropriation, provision, monitoring and enforcement; collective-choice rules define policy making, management and adjudication; constitutional-choice rules address formulation, governance and modification

analysis, the specific operational rules vary greatly across these robust systems, but a set of seven *"design principles"* can be found in most of them[19]. *"A design principle is defined as a conception used consciously or unconsciously by those constituting and reconstituting a continuing association of individuals about a general organizing principle"* (Ostrom, 1999, p.1).

I have adapted Ostrom's design principles (1990, p. 90-101) to the specific case of EACs:

(1) Clearly defined boundaries. It must be clear who can benefit from the organization. It must also be clear what the organization wants to achieve in terms of the common good. These boundaries define who must contribute and who can benefit, and what they have to contribute to or benefit from.

(2) Congruence between appropriation and provision rules, and market conditions. Rules defining benefits ('appropriation') are congruent with rules defining costs ('provision'), and both are related to the conditions of the markets in which the EAC will participate. Operational rules based on this principle ensure that the rewards obtained by the different participants in the collective action are clearly related, in a way that is acceptable to the participants, to the efforts and contributions made by each individual. In turn, both the efforts and contributions of each individual, as well as the rewards that he or she can extract, must be in balance with the conditions of the markets in which the EAC is participating.

(3) The individuals affected by the day-to-day operational rules can help modify them. This allows the EAC to tailor its rules to its own circumstances. It also gives these rules social legitimacy. White and Runge (1995) have shown that compliance with rules is enhanced and the costs of monitoring and enforcement are lowered, when the participants believe that rules are fair.

These three design principles allow the members of the EAC to define a set of operational, day-to-day rules, and to agree in principle with them. The following two principles provide additional incentives for the members to actually follow the rules they have designed:

(4) Low cost systems for monitoring compliance should be in place, and those who carry out the monitoring must be members of the organization, or accountable to them.

(5) Sanctions on those who violate the operational rules should be graduated, depending on the seriousness and context of the offense.

In an EAC, the costs of monitoring must be low, or more precisely, lower than the benefits derived from enforcement. Sanctions should be graduated because enforcing them entails a cost. If the costs of monitoring and enforcement are as low as possible and in balance with each other, and if the information produced by the monitoring system is accepted as 'true' or reliable, then it is more feasible to achieve what Levi (1988) calls quasi-voluntary compliance with the rules. Following Levi, Ostrom (1990, p. 94) states that *"She [Levi] uses the term 'quasi-voluntary compliance' to describe taxpayer behavior in regimes where most everyone pays taxes. Paying taxes is voluntary in the sense that individuals choose to comply in many situations where they are not being directly coerced. On the other hand, it is 'quasi-voluntary' because the non-compliant are subject to coercion—if they are caught."*

(6) Low cost internal mechanisms should be readily available to solve conflicts between members of the organization or between them and their officials. In an EAC there are many cases of ambiguity in the applications of the rules. Many rules are open to interpretation, and the seriousness of an offense often depends on the context in which it takes place and on the past

(Buck, 1998).

[19] For larger, more complex systems, Ostrom (1990) proposes an eighth design principle: systems, appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises. I have left this principle out of my analysis because it does not apply to most EACs.

history of the violator. If operational rules are to be kept as simple as possible, there must be mechanisms to solve the conflicts that can emerge from their interpretation and enforcement.

(7) The right of members to devise and enforce their own internal rules should be recognized and respected by external authorities. If external authorities constantly interfere in an EAC's system of operational, collective-choice and constitutional-choice rules, it will become almost impossible for organizational learning to take place; such learning is necessary for the progressive improvement of these institutions.

2.5.3 Learning processes and the development of systems of rules

Systems of rules, like other forms of social capital, are created through social interaction over time. Hirschman (1984) has proposed that individuals and cooperative groups continually transform themselves to deal with new social problems, so that there is an accumulation of knowledge about collective action, when it is feasible, what the probable outcomes are, if and which parts of the community will become involved, etc. Communities with a deeper tradition of collective action have a better chance of addressing common goods or common resource problems successfully. Putnam (1993) reaches the same conclusion from a different level of social aggregation, in his study of civic institutions and regional governments in modern Italy.

EACs design, assess, and revise their systems of rules through organizational learning processes (Argyris, 1992; Nonaka and Takeuchi, 1995; Cohen and Prusak, 2001; Axelrod and Cohen, 1999). Often social exchange among the members began before the organization was officially formed; in this case, the learning process leading to effective systems of rules also precedes the emergence of an EAC.

EACs learn by comparing expectations with outcomes, by interpreting changes in their external environments, from observing similar organizations and other relevant experiences, and by drawing lessons from unpredicted and surprising events (I. Guijt, personal communication, May 2001). The information and knowledge derived from this analysis modifies the behavior of the EAC and its members, and, eventually, *may* be codified into new or modified procedures and rules.

All EACs have the opportunity to convert lessons into procedures and rules, but only some actually do this. Others do not seem capable of adapting, even in the face of failed expectations, changing environments, 'best practice' examples or surprising events.

The ability of an EAC to incorporate learning into progressively more effective sets of rules, depends on how it emerged (Figure 2.1), especially the balance between the incentives provided by governments and markets, the capabilities of the individuals, households and communities involved, and the support given by intermediate agents.

If one of these elements is missing or undermined by another of the elements, the EAC is unlikely to be able to generate effective rules for countering opportunistic behavior. It would take the onset of a major crisis to alter its institutional development path and to give it an opportunity to amend its system of rules.

When the EAC is forming, the assets of the individuals involved may or may not be sufficient to achieve the common objectives. This can occur, for example, because the organizational models contributed by intermediate agents, or the design of the public programs impose certain boundaries which do not correspond with the EAC's objectives. In several of the case studies discussed in Chapters 8 to 12, we will see how the EACs were initially artificially enlarged to satisfy the requirements of certain public programs. The result is likely to be great difficulty, if not impossibility, in devising a system linking rewards and contributions that is fair to all the members. Some members become 'enforced free riders' simply because their capacity prevents them from meeting the rules guiding contributions. In turn, this creates an incentive for other members to defect.

Figure 2.1 shows that markets provide incentives for EAC formation through relative prices. Such prices are a major consideration when potential EAC participants are assessing the likely costs and benefits of collective action. The nature of government incentives to stimulate or support EAC formation can radically alter this assessment, for example, by externalizing certain costs. If the

government incentives are on-going, then there is a good chance that appropriation and contribution rules will not concur with each other or with the market signals. In other words, the system of rules will not transmit the appropriate market signals to individual members, and the EAC will rapidly 'lose touch' with the market. Under these conditions, all members will have a strong incentive to defect, as was the case for EACs engaged in potato marketing (Chapter 10).

The same can occur when external agents offer misleading organizational models. For example, many NGOs, extensionists or private consultants believe that EAC membership will always improve a small farmer's results when marketing his or her produce. Farmers can be easily be convinced by this argument; they almost universally feel that the prices they receive are unfair because of their lack of power in negotiating with traders, and that pooling their resources in an EAC will increase their chances of influencing market prices. Furthermore, if members of a new EAC lack a common history of collective action, they will also lack norms and precedents for rule-making. This will make them more likely to accept models imposed or proposed by external agents.

Social capital can also undermine the rule development process. Strong leaders or tight core leadership groups within emerging EACs can weaken broad member participation in defining rules for guiding contributions and appropriations, or can block the process of monitoring and enforcing compliance with agreements and obligations. Communities with particularly strong internal networks and well-established roles (*"bonding social capital"*, Woolcock and Narayan, 2000), may be less able to adapt rules to make them relevant to economic activities. Family ties among EAC members can undermine the enforcement of agreements through graduated sanctions. The effects of social capital at the onset can sometimes occur in a way which runs counter to what much of the literature predicts. For example, lack of trust among members can actually result in better-designed and more effective rules for monitoring compliance. If the EAC is not embedded in a rural community, it will not benefit from many low-cost compliance monitoring and enforcement rules that are based on close physical and social proximity.

The types of rules designed at the EAC's inception create incentives for certain courses of action by members and discourage others. This pattern of behavior reinforces the original set of rules, creating a cycle. An EAC's behavior tends to follow one of three broad paths, each exemplified by the various case studies in Chapters 8 to 12:

(1) Very soon after the formation of the EAC (even by the time of the first collective effort of marketing or value-adding), all or most of the members default on their commitments and obligations and the collective action fails. This tends to happen when the operational rules governing decisions on costs (contributions) and benefits (rewards) did not concur with the conditions of the relevant markets, either because the EAC's activities or business-plan were designed based on false assumptions (e.g., *"if 30 smallholders get together they will surely force middlemen to pay them a higher price compared to that received by non-members"*), or because government subsidies to the EACs and/or its members are so large that they completely distort market signals. The EAC may only survive if members want to maintain access to resources provided by the government or by intermediate agents, such as loans, grants or technical advice. As these external supports are withdrawn or come to an end, the EAC collapses. This sort of situation can be seen in Chapter 10, where the cases studies of potato-marketing EACs are discussed.

(2) Some of the members free ride on others' contributions. No sanctions are applied because of the internal power relations within the EAC, or because the costs of sanctions are too high. Those that bore the cost of the opportunistic behavior are discouraged from contributing further. They may defect if there are exit options available, or they may remain within the organization if the perceived cost of defecting is higher than sustaining the free riders. The result is a lack of incentives to improve their contributions for either the free riders or for those who sustained the cost of their opportunistic behavior, and the EAC will gradually lose its market competitiveness. Any change in rules will be resisted by the free riders. The rules are only likely to be changed if a crisis either allows the contributing members to get rid of the free riders, or if it greatly increases

the perceived or actual cost of the free riders' behavior. We can see examples of this situation in some of the case studies of the Milk Collection Centers (Chapters 8 and 9), and, to some extent, in two of the EACs dedicated to processing and marketing raspberries (Chapter 12).

(3) All or most of the members abide by the rules. The system of rules is reinforced and improved over time. The EAC is likely to be sustained even in the face of disappointing results, as long as the members continue to perceive that the outcomes are not due to behavior against the rules. The EAC can become an effective and sustainable economic organization, if other factors (aside from its institutional performance) also contribute to its achieving positive economic and financial results. Examples of this situation are given in Chapters 8 and 9 (milk), 11 (vegetables) and 12 (raspberries).

Before I use this conceptual framework to analyze the information gathered for this study, I first discuss the methods and materials used in my research (Chapter 3).