



LUND UNIVERSITY

Department of Economics

Do Cooperatives Improve the Well-being of the Individual?

- A Case Study of a Bolivian Farmers' Cooperative

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Abstract

This thesis investigates how cooperative membership impacts on the well-being of the individual. The case of the umbrella cooperative El Ceibo, operating in Bolivia, is investigated. Organizations such as the UN, the World Bank, and the ILO have high hopes for agricultural cooperatives as partners in the struggle for rural development. However, there is a lack of empirical studies investigating the role that agricultural cooperatives may have in the process. This thesis aims at making a contribution to the understanding of long term, non-economic impacts of cooperative membership. In order to understand the complex nature of cooperatives, they are put into context by the UK Department for International Development's version of a Sustainable Livelihoods Framework.

Subjective measures of life satisfaction and family health were used as measures of well-being. Using face to face surveys among member farmers, data was collected and analysed with ordinary least square linear regression methods. A small, positive relation between membership length and life satisfaction was found. Thus it seems that cooperative membership does impact positively on overall well-being. It is possible that the relation is caused by reversed causality, since early joiners may have certain socio-economic characteristics that make them more satisfied with life. This is argued to be unlikely, since the long-term members do not have better averages of education or sociability than others, and also seem to be less satisfied than middle-term members.

On the contrary to life satisfaction, membership appears to impact negatively on family health. A possible explanation for this may be aging parents causing what appears to be a negative relation, when in fact it is positive. In general, it seems that cooperatives are better prepared to improve member's life satisfaction, rather than health.

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1 Introduction

It is widely recognized that rural and agricultural development must play an indispensable part in any strategy to achieve economic development. As the world population grows, it is a very urgent matter to increase developing countries' agricultural output. At the same time, climate change and degradation issues have to be taken into consideration. How are development strategies that address all of these issues to be constructed? Key organizations such as the UN, the World Bank and the ILO propose that agricultural cooperatives can play a vital role in achieving sustainable, rural development. According to studies conducted in earlier decades, however, the performance of cooperatives has been disappointing. Starting in the 1990s, a liberalization of cooperative regulation was initiated, since government interventions and bad policies had been found guilty of cooperative failures. Since then, the interest for cooperatives has experienced a renaissance. According to the UN (2008) cooperatives are by nature concerned with democratic and human values, as well as caring for the environment. Furthermore, cooperatives are catalysts for social organization and cohesion. The ILO Recommendation No. 193 also highlights cooperatives' readiness to contribute to sustainable development and decent employment. To promote and create awareness about co-ops, the UN has even proclaimed 2012 to be the international year of cooperatives. The aspirations for cooperatives are many, but the empirical research on how they operate in the context of rural development is far from exhausting.

1.1 Research question and purpose

Many scholars comment on the lack of empirical research conducted on the role cooperatives in rural development (Birchall et. al, 2008, Myers, 2004, Bebbington et. al, 1996). Generally when evaluating cooperative performance, it has been common practice to measure changes in member household's income. Investigations of the long term impacts on cooperative membership and non-economic performance is hard to come by and perhaps even absent altogether (Myers, 2004). This thesis aims at making a contribution to fill the gap. In order to shed some light on long term, non-economic aspects of cooperative membership, a case study of the cacao producing umbrella cooperative of EL Ceibo, operating

in Bolivia, was carried out. The study centered on the question:

Does long-term membership in El Ceibo improve well-being?

More specifically, the membership effect on health and life satisfaction was investigated. Needless to say, good health and life satisfaction are goals in themselves. In addition, such aspects may also enhance development. Good health is a prerequisite for increases in productivity and for children to effectively participate in school. Good health also increases the returns of education (Todaro ó Smith 2006:363, 366). Life satisfaction may also contribute to productivity increases.

This study employed subjective measures of well-being, in order to avoid jumping to conclusions about what well-being is to El Ceibo farmers. By using face to face survey method, data on membership effects on well-being was collected and analyzed by statistical analysis. The results suggest that there is in fact a small positive effect on the overall well-being.

2 Theoretic Framework

This chapter starts by an introduction to the cooperative debate and a discussion of what constitutes cooperatives. Secondly, well-being as a concept is discussed and lastly, these two aspects are put into context by the UK Department for International Development (DFID) version of a sustainable livelihoods framework. Cooperatives operate on multiple stages and affect their members in several ways. In order to understand the complexities of cooperatives, it is important to use a broad framework. The DFID (1999a) framework is holistic in character and has been developed to help analyze and understand the livelihoods of people in precarious situations. It is based on academic research on the area and is created so that selected parts of it can be given special attention, depending on the occasion.

2.1 About cooperatives

Despite meager performance in the past, the aspirations for cooperatives are still many. In this section a short background to how the view of cooperatives has changed is presented.

2.1.1 Previous research

Studies conducted in the 60s, 70s and 80 have showed disappointing results of cooperative performance (Birchall et. al., 2008, Myers, 2004). Researchers have blamed heavy government intervention and bad policies for such failures (Hussi et. al, 1993). Since then, a liberalization of cooperative regulation has taken place, but most existing research was conducted in a time when the interventions prevailed. Thus, the disappointing results from this time neither proves nor disproves the case for cooperatives (Birchall, et. al., 2008). Since the 1990s, the interest for cooperatives has experienced a renaissance and organizations such as the UN, the World Bank, and the ILO still believe cooperatives to be viable partners for rural development (Birchall, et. al., 2008, Myers, 2004)

Recent research has found that agricultural cooperatives effectively can assist smallholder farmers to access international markets (Myers, 2004, Higuchi et. al, 2010). Organizing within cooperatives also enable farmers to achieve economies of scale, bargaining power, and allow farmers to invest in more advanced stages of the value chain. Furthermore, cooperatives are important civil society actors that transfer decision making to the community level, and enhance social capital

(Myers, 2004). According to Birchall et. al. (2008) the organizational comparative advantage of cooperatives is not an individual and unique trait, but a combination of strengths. These strengths are member ownership, member benefit, and member control generating from cooperatives being through and through member based organizations.

2.1.2 Definition

The most wide spread definition of cooperatives is the International Cooperative Alliance (ICA) version. In real life, however, it is clear that not all cooperatives fit into the definition completely (Hakelius 1996). Perhaps the definition should be seen as an ideal version of a cooperative. According to ICA (2007) a cooperative is:

“An autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations, through a jointly owned and democratically controlled enterprise.”

Furthermore, the ICA sets up seven cooperative principles that are of great importance:

1. Voluntary and open membership
2. Democratic member control
3. Member economic participation
4. Autonomy and independence
5. Education, training and information
6. Cooperation among cooperatives
7. Concern for the community

The second and fourth principles, regarding democratic member control and independence are particularly important. Those parts were changed after the discovery that government interventions had been harmful (Birchall, et. al, 2008, Myers, 2004). The principles aim at guaranteeing that co-operatives, by definition, should be managed autonomously by its members. Training and information are prerequisites for membership participation to be effective (UN, 2008).

2.2 Well-being as a multifaceted concept

The World Health Organization, WHO, advocates a multifaceted view of health: “Health is state of complete physical, mental and social well, and not merely being the absence of disease or infirmity” (cited in Bourne et al 2010). It is common to use either life satisfaction or self-rated health separately as proxies for well-being (Bourne et. al., 2010, Lora et. al., 2009, Bonini, 2008). However, these

two concepts are far from the same thing. Many studies find that respondents think of health in terms of illness, rather than over all well-being (Bourne et. al., 2010). Life satisfaction is broader in scope and include aspects such as job satisfaction and social relations (Lora et. al., 2009). This causes Bourne et. al. (2010) to recommend life satisfaction as better measure of overall well-being. This study takes on a more holistic approach and include both health and life satisfaction.

In order to include all aspects of well-being, subjective measures are employed. Traditionally economists have preferred using objective measures for the purpose of investigating over all well-being. Morbidity or mortality was used as measures for health and income and consumption as proxies for life satisfaction. Lately, however, there has been an upsurge in economists using more subjective measures (Bourne et. al., 2010, Cárdenas et. al., 2009, Graham ó Behrman, 2009). Mentioned objective measures are inadequate because they leave out social and mental aspects of well-being. Self-rated health (SRH) on the other hand has been found to cover objective health aspects satisfactorily. SRH accurately predict mortality and health service consumption, and it is associated with disease burden and other physiological markers of health (Brenes ó Camacho, 2011). Regarding over-all well-being including all aspects of life, it is the broad consensus among scholars that it is measurable to a certain degree of precision and that it is sensitive to changes in living conditions. Measurements such as life satisfaction and happiness are well associated with other indicators of over-all well-being, such as frequency of laughter, sociability, optimism and those reporting themselves to be happy are also considered to be happy by others (Lora et. al., 2009). Both SRH and life satisfaction are affected by cognitions and subjective perceptions. Because of this the concepts are interrelated, and together they form a good base for understanding over-all well-being.

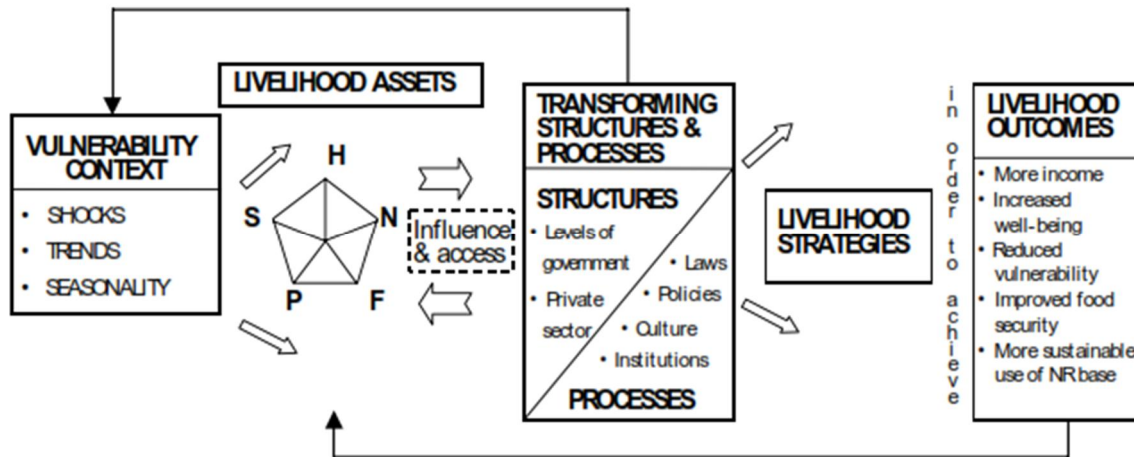
2.3 The Sustainable livelihoods framework

The livelihood discussion was developed as a response to criticism of reducing poverty into levels of income. Livelihood deals with, in addition to material means of survival, perceptions on safety and support systems for survival (Bacon, 2005). One of the components of the DFID framework, the social capital asset, will be given extra attention. The reason for this is that cooperatives are considered very social capital dependent, and abundant. More so than other types of organizations, since cooperatives by design are network organizations and built on ideas of collective action (Hong ó Sporleder, 2007). In fact, the revival of interest for cooperatives can in part be explained by the recent popularized concept of social capital (Myers, 2004).

2.3.1 The DFID framework

In the DFID (1999b) framework people operate within a context of vulnerability. This vulnerability is created by external trends, shocks and seasonality, which are

Figure 1: The DFID (1999b) Sustainable Livelihoods Framework



outside of people's control. Examples of trends are changes in population, national or international economic trends and government policies. Shocks may be human or crop health shocks or natural disaster. Seasonality includes seasonal changes in prices and production. In order to cope with such external disturbances, people use the livelihood assets that they have access to. In the center of the model (see Figure 1) is the asset pentagon, illustrating the equal emphasis on Human Capital, Natural Capital, Financial Capital, Physical Capital, and Social Capital.

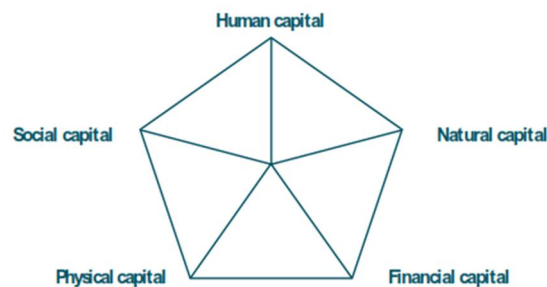
Transforming Structures and Processes refers to institutions, policies and legislation that constitute the structures in which people operate. These are present at all levels and spheres. Structures could be anything from norms affecting family life to international trade policies affecting business. Such structures are not fixed, however, but in constant change.

Livelihood strategies reflect the choices people make on how to live their lives, based on the opportunities (resources) and constraints (structures) that are present. The strategies undertaken aim at achieving positive livelihood outcomes. These regard every aspect of life, ranging from productive activities, investment strategies, and reproductive choices. The DFID make suggestions as to what positive livelihood outcomes may be. Among them are increased income, reduced vulnerability, and increased well-being. But it is emphasized that people themselves are the only ones to decide upon what a positive livelihood outcome is to them.

2.3.2 Livelihood assets

The asset pentagon is at the core of the model and lies within the vulnerability context. The pentagon can be used to illustrate differences in livelihood assets, with the middle point representing a stage of no access to any kind of asset. The more assets a person has access to, the bigger is the range of strategy options available to that person. This is where the cooperatives come in. By increasing their members' access to assets, it can help them to acquire for them positive livelihood outcomes. Cooperatives can help members to access all types of assets, but most of all to social capital, as discussed previously. Thus, all members of farmers' cooperatives should have a pentagon biased towards the social capital corner.

Figure 2: The asset pentagon



Here the assets are presented one by one but it is important to remember that they are interrelated.

- **Human capital** represents skills, knowledge, ability to labor and good health. The accumulation of human capital can be achieved formally (by schooling or health programs) or indirectly. Sharing knowledge with the poor has historically been difficult, and it is obvious that using appropriate channels for communication is crucial in order to succeed with knowledge diffusion (DFID 1999b). Education is a cornerstone in the ICA definition of a cooperative. Thus cooperatives should be providers of formal education. They can possibly also constitute effective networks for informal knowledge distribution. Human capital is necessary for the other assets to be of use. Without available labor and knowledge, assets such as natural capital are useless (DFID 1999b). When a farmer is taught to better manage his or her farm, the options available are likely to increase. The farmer that prefers to increase his or her income will experience incentives to work more. On

the other hand, the farmer that prefers leisure time can work less with maintained levels of income. Education may also rise aspirations and improve self-esteem, which further increases strategy options. Knowledge of disease and how to manage other types of crises may reduce feelings of stress, which improves health. Education often leads to better employment options and thereby works as an insurance. This may also lessen the stress burden of insecurity.

- The meaning of **Social capital** varies, since there is no universally acknowledged definition. Within the DFID framework it is loosely defined as social resources that matter for livelihood objectives. Networks and connections (horizontally or vertically), membership of formalized groups, informal relationships and the building of trust are important aspects (DFID, 1999b). This connects to the concepts of bonding, bridging, and linking, which have been introduced to the social capital theories. Simply put, bonding refers to improved relations between individuals within a network, bridging refers to relations across networks and linking the vertical relations between a network and external agencies such as governments and higher level organizations (Hong ó Sporleder, 2007). It is well established that high quality relationships with others and belongingness are important predictors of psychological health (Mellor et. al., 2008). Psychological health is in turn expected to impact on both life satisfaction and self-reported family health, since these two are both affected by cognitions. It is also well-established that the possibility of creating interpersonal relations is of major importance to life satisfaction (Lora et. al., 2009). Being a member of a cooperative may create feelings of belonging and purpose, as well as to improve interpersonal relations and trust. Considering the ICA definition, integrating or bridging with other cooperatives is of key interest. This might lead to mutual benefit and the spreading of innovations and knowledge (DFID, 1999b). Cooperatives have also been found to be good partners for linking farmers with governments, NGOs and other higher organizations (Myers, 2004). Among other things, improved interpersonal relations and trust can increase efficiency and reduce the costs of working together (thus creating financial capital). Linking effects may facilitate knowledge diffusion (human capital) and facilitate donations and investments (financial capital). The building of networks in general is also related to security. Often, farmers build kin and friendship networks as their principal defense in case of a shock (Bacon, 2005). Thus, social networks also increase strategy possibilities and may reduce feelings of stress and worry.
- **Natural Capital** refers to natural resource stock that affects livelihoods. Such may be intangible public goods or assets used directly in production (like land). A sustainable usage of natural capital is necessary in order to maintain its value and secure future benefit. Natural resources are indispensable for livelihood, since safe foods and

water are affected and many, including farmers, live directly of natural resources (DFID, 1999b). Cooperatives may contribute to the natural resource stock by promoting sustainable usage of resources. Sustainable usage of land may increase the sense of security among farmers. Natural capital assets may not primarily affect health and life satisfaction, however.

- **Physical capital** refers to basic infrastructure and producer goods needed to support livelihoods. Important infrastructure components are transport, buildings, high quality water supplies and communications. Producer goods are tools and equipment used in production (DFID, 1999b). Cooperatives may supply members with equipment and can help build up infrastructure in the community. The absence of good infrastructure highly deteriorates physical health and disables economic growth (financial capital) (DFID 1999b). Better infrastructure should increase choices, like how to market crop and improve efficiency. With increased efficiency, more time is made available to spend on whatever makes the individual satisfied. Better equipment may lessen physical strain on the body.
- **Financial capital** is mostly comprised by financial stocks (like savings) and all types of income (salary, pensions, dividends etc.) and financial flows (like loans) (DFID 1999b). Acquiring more financial capital is often one of the main incentives for the individual to join a cooperative. The aim of many cooperatives is to achieve economies of scale or to increase bargaining power. Some cooperatives also offer credit to its members. Financial capital is a very versatile asset since it can be converted into many other types of capital (DFID 1999b). For instance, money might be needed to afford schooling and healthcare (human capital) and investments in equipment and infrastructure (physical capital). Being in control, feelings of self-esteem, the physical security of household members, and access to services are factors that are likely to influence well-being (DFID 1999b). If cooperatives can help increase farmers' income, then options for achieving positive livelihood outcomes are substantially increased. Money can be spent on whatever makes a person satisfied. It may also increase feelings of self-esteem and pride. If the cooperative offers credits and other types of financial security facilities, this might reduce stress and worry.

The expected positive effects of cooperative membership are summarized in Table 1.

Table 1: Expected benefits of cooperative membership

	Impacts on life satisfaction	Impacts on self-reported family health
Human Capital	Formal and informal education increase aspirations and self-esteem. Enables more options.	Formal and informal education: disease and physical strain prevention, improved nutrition, stress reduction.
Social Capital	Belonging and purpose, improved relations through bonding, bridging, and linking. Increased security.	Improved psychological health, reduced levels of stress.
Physical Capital	Increased choices.	Increased physical health.
Financial Capital	Increased choices, and may invoke self-esteem and pride.	Can be spent on health services, education, better quality foods, and physical capital. Reduce levels of stress.

3 The Case: El Ceibo

The case under investigation for this thesis is El Ceibo, a federation of 49 cacao-producing cooperatives. These cooperatives represent over 1,200 families living in the tropical Alto Beni region, located in the north department of La Paz, Bolivia. The local El Ceibo office in this region is situated in the village Sapecho. In addition to producing the bean, El Ceibo also produce chocolate products such as bars, powders and cereals that are sold on the domestic market as well as exported to markets in the United States, Japan, and Europe. The headquarters and industry is located in the city of El Alto. El Ceibo is ISO 22 000:2005 and Fair Trade certified. El Ceibo cacao is organically produced and products are approved by the EU organic certification among others. During its little over 40 years of existence, the El Ceibo organization seem to have been exempted from bad governmental policies that have affect cooperatives in other parts of the world (compare Bebbington et. al., 1996).

3.1 History

Government program for colonization of the tropical Alto Beni region was initiated in the 1960s (Hillenkamp 2006). Indigenous farmers and displaced minors from the Andean highlands started to populate the area. It was also on government initiatives that cacao was introduced in the area. Today it is which the principal cash crop (Bebbington et al. 1996). Road access has slowly improved since then. Some villages only got access to acceptable roads in recent years.

The majority of the El Ceibo members are settlers, or sons and daughters of settlers. However, some members belong to an ethnic group that has lived in the area for centuries. This group of people is called "Originarios" or "Moceteños", and constitute the main ethnic group of the member cooperative Integral Unificada.

The first cooperative to be founded in the region, "Cooperativa Alto Beni Ltda", was also created by a government colonization program. Although the cooperative was dispersed after some time, the cooperative spirit continued to live on. The El Ceibo umbrella cooperative was founded in 1977 by five cooperatives and seven pre-cooperatives (cooperatives that are in the process of becoming members) (Bebbington et. al., 1996). It started off as a marketing cooperative, so as to avoid being exploited by middlemen who pressed prices (El Ceibo, 2011). El Ceibo has developed, with financial assistance from the Inter-American Foundation and the Swiss Development Cooperation among others (Bebbington

et. al., 1996), into a multifaceted organization which now offers micro credits to its members and even plans to invest in a university in the area.

3.2 El Ceibo and the ICA definition

The El Ceibo organization follows a set of principles that to a big extent corresponds to the ICA definition, but has a slightly different focus. The principles are (Hillenkamp 2006):

- Democratic participation
- Continuous education
- Sustainable and organic production
- Redistribution of excess resources
- The integration with similar organizations

A difference between the ICA definition and El Ceibo's principles is that ICA emphasizes the open and voluntary membership as one of the most important traits of a cooperative. The El Ceibo membership is voluntary and de jure open. However, it de facto excludes poorer farmers as there is an entry fee to every cooperative. The fee is proportional to the estimated value of the cooperative. The member cooperatives thereafter have to buy shares of the umbrella cooperative, El Ceibo. Since the value has grown with time, so has the entry fee (Bebbington et al 1996). In 2006, the fee varied between 500 and 800 USD, which is a considerable amount to a farmer in the area (Hillenkamp 2006). There has not been any reports on farmers being denied membership on the basis of ethnicity or gender, however.

3.3 El Ceibo's contribution of livelihood assets

While members and non-members are assumed to be subjected to the same shocks and the same structures, being a member of the cooperative might offer additional resources that are not available to non-members.

- **Human capital** is provided by formal training in the form of courses on technical assistance, management of the allotment as well as regarding cooperative values. Technical assistance is also given by technical experts, employed by El Ceibo, that make visits to member farmers (Hillenkamp 2006). Thus, by improving human capital El Ceibo also increase chances for productivity advances. Members that are employed to work within the cooperative's chocolate industry are given further education. El Ceibo also encourages university studies, by offering student loans and grants to members' sons and daughters (Hillenkamp, 2006). Regarding health, El Ceibo has not offered its members any formal education (regarding issues such as nutrition and

ergonomically preferable techniques). El Ceibo staff is aware of problems of malnutrition and low levels of health knowledge among members. The management is currently planning a project to make nutritional recommendations to members. Up until now, the only human capital impact El Ceibo may have had on members health is that of constituting a network for informal knowledge distribution. Looking at agricultural cooperatives in other parts of the world, there are those that have done considerably more to improve members' health. Some even manage their own hospitals (Birchall, 2004).

- **Social Capital** is improved in many ways by the El Ceibo organization. Being a member may in itself invoke senses of belonging and purpose. El Ceibo has successfully created linkages between several help organizations and its farmers. These have mainly contributed with financial help (Hillenkamp, 2006). Currently, El Ceibo is receiving help from an NGO to increase the involvement of sons, daughters and wife members, since they have been found to be less involved in the organizations. The discrimination of women, poor, and illiterate has been a longstanding critique of the cooperative model (Myers, 2004). Discrimination tendencies may deteriorate social capital within the organization. Hillenkamp (2006) found that some of the younger El Ceibo members in fact felt discriminated in favor of the elders. Thus, by contacts with an NGO, El Ceibo are about to make investment to improve social capital within the organization.

Member cooperatives may also improve bonding by supplying neighbors with incentives to cooperate and requiring them to meet on regular basis. There seem to exist big differences between the cooperatives on this matter, however. Hillenkamp's (2006) study show that some members are disappointed by the sporadic occurrence of reunions and state that they are not sufficiently informed on what is going on within the cooperative. On the other hand, among some members there exists enough trust to give each other private credits, farmer to farmer.

The El Ceibo central cooperative may also provide incentives to member cooperatives to work together, and provide arenas to meet. Contacts with other cooperative members and with El Ceibo staff may facilitate innovations and the informal diffusion of knowledge.

- When it comes to **Natural Capital**, El Ceibo contributes to the sustainable usage of land by encouraging organic farming. It is possible to imagine that less usage of chemicals in the production improves health. It is also possible that using the resources in a sustainable way gives the farmers a sense of pride and purpose. Indeed, Valkila and Nygren (2010), found such tendencies when they investigated social impacts of Fair Trade certification among coffee farmers in Nicaragua. Organic farmers expressed both pride and understanding of their sustainable methods. This is closely related to

social capital aspects of sense of belonging and purpose. The natural capital effects may in themselves be less important for well-being.

- El Ceibo has helped to build up **Physical capital** in the area, in the forms of infrastructure. For instance, before small villages were formed, in which one now can acquire purchases for basic needs, the member cooperatives used to manage small grocery shops (Hillenkamp, 2006). However, investments in infrastructure benefit both members and non-members. El Ceibo does not provide its members with equipment or machines. Thus, there are no physical capital benefits offered solely to members.
- As explained, increasing incomes, and thus **Financial capital**, has been one of the main reasons for El Ceibo farmers to engage in collective action. Raising incomes has successfully been achieved. Even non-members have benefitted from the existence of El Ceibo, since other purchasers of cacao have been forced to raise prices (Hillenkamp 2006, Bebbington 1996). Sometimes non-member cacao farmers are able to sell their production to El Ceibo for the same price as members (Hillenkamp, 2006). Thus, some of the financial capital benefits may have benefited non-members as well as members. There exist collective purchasing of seeds within the cooperatives, but machines and equipment are acquired by the individual farmers (Hillenkamp, 2006). Thus, the potential of economies of scale benefits are limited within El Ceibo cooperatives.

El Ceibo helps their members financially by insuring them with a premium of USD 200 (in 2006) in case of serious illness. Those older than 60 years receive a small pension of USD 200 each year. There is also the possibility for members to receive micro loans without interest of up to USD 300 per year (Hillenkamp, 2006). These services form a certain financial security to members, reduce their vulnerability in case of shocks or seasonality, and should enable long-term strategic investments.

Famersø possibility to spend financial capital on health services is limited. According to the El Ceibo management, formally educated medical staff is not present in the area. Medication is often limited to herbs and plants with limited mending effects.

The slight changes in expected positive effects of membership as the specific cooperative of El Ceibo is considered can be viewed in Table 2. The changes are the removal of physical assets, formal health education, and the possibility to spend financial capital on health services. To summarize, El Ceibo membership is expected to impact on life satisfaction for several reason, while the expected positive impacts on health are mainly limited to stress reduction.

Table 2: Expected benefits of being a member of an El Ceibo-cooperative

	Impacts on life satisfaction	Impacts on self-reported family health
Human Capital	Formal and informal education: increased aspirations, increased options, self-esteem	Possibly informal education regarding: disease and physical strain prevention, improved nutrition, stress reduction
Social Capital	Belonging and purpose, improved relations through bonding, bridging, and linking	Improved psychological health, reduced levels of stress
Physical Capital	-	-
Financial Capital	Increased choices, self-esteem, pride	Can be spent on better quality foods and better production tools, and reduce levels of stress

4 Method and Data¹

In order to answer the question of whether membership has had a long term impact on health and life satisfaction, a linear least ordinary square regression analysis is used. A membership length variable is included in order to see if it impacts on health and life satisfaction. The standard equation of regression analysis is:

$$i) \quad y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + \epsilon_i$$

Where y is the dependent variable (in this case health and life satisfaction), β_0 is a constant, x_1-x_k independent variables (membership length and control variables) and ϵ_i is a random term. The components of the equation are discussed further in this chapter. The regressions were calculated by using SPSS. Variance inflation factor (VIF) is quite commonly used as an indicator of multicollinearity (Gujarati, 2003:362). The VIF values of variables included in the model were therefore scrutinized in order to detect multicollinearity.

Sample surveys are most effective when based on existing qualitative investigations of the population of interest (DFID 1999c). Two descriptive and more qualitative studies of El Ceibo farmers, namely Bebbington et. al (1996) and Hillenkamp (2006), have been of great use for this study. The former study has given insight into what data to collect and the latter has been used to interpret the data. The statistical survey that is presented in this thesis thus serves as a good complementary information source to the other two. Similar statistical analyses have also been useful to construct the survey and to interpret the results.

The Hillenkamp (2006) study includes twelve in depth-interviews that are of great interest, but hardly can be said to represent the entire El Ceibo population. The sample survey presented in this thesis comes closer to being representative (see discussion below) and enables comparison with other studies. It is also a good base for making comparison over time.

1) Data file and photocopies of surveys available upon request. Please send an email to stv06cho@student.lu.se

4.1 Collecting Data

The collecting of data was conducted within three weeks: one week of planning together with El Ceibo staff in El Alto, and two weeks of meeting with the farmers. The first week was spent formulating questions and discussing them as well as methods with the president of El Ceibo and other executives. The two following weeks were spent conducting face to face surveys with farmers in the Alto Beni region.

4.1.1 Population and sampel

Out of 50 member cooperatives with between 10 - 40 member households, 22 cooperatives were represented by at least two members. In total 144 members were interviewed and 138 included in the analysis. (In order to control for cooperative membership respondents that were the only representative of their cooperative had to be excluded.) Thus, the recommendation of including at least 100 cases in a statistical study was fulfilled (Overton ó van Dierman, 2003). No more than a single member of each household was consulted. Thus it is fair to say that 137 households are included in the study. The youngest participants in the study were 18 years old. 41 % of participants were women and 59 % men.

Only people with lower positions within the administrations were interviewed. People such as the president and other executives were excluded since they can't be expected to represent the members in general.

The method used for getting in touch with the farmers was twofold: Visiting the farmers in their homes and meeting with them when they came to the El Ceibo office in Sapecho. The former method had the disadvantage of limits of distances. Since time for conducting the study was scarce, places within a travel time radius of one and a half hours from Sapecho were chosen. Within this radius, cooperatives were selected on the basis of being new or old. This technique of selection is described as "purposeful sample" by Overton and van Dierman (2003), and is not a probability sample since selections depend on the judgment of the researcher. This method was used in approximately two thirds of the samples.

Farmers living at greater distance, such as members of the cooperative "Brecha Tö", were interviewed at the El Ceibo office when opportunity was given. Their motives for coming to the office regarded micro loans, discussions on selling cacao and other administrative issues. It is reasonable to believe that the probability of meeting with the farmers with poorer health, lower income and less contacts with the central office were fairly low. After all, the ride to the office would be uncomfortable for someone with poor health and expensive for someone with low incomes. The "unsocial" farmer might avoid going there, if possible, while the "social" farmer might look for reasons to go. Therefore, this method was only used as a complement to the former. In principal, all members had a probability greater than zero to show up at the El Ceibo central, which is the minimum requirement of a probability sample.

The combinations of methods have left the cooperatives unequally represented (see appendix 2 for details). Thus, each cooperative are not adequately represented. On the whole, however the El Ceibo members are fairly well represented.

4.2 The interviews and the questions

Face to face surveys was used for this study. Response rates were as high as 98 %. Following recommendations of Overton and van Diermen (2003) on development fieldwork, the questionnaire was kept short and was commenced with the most basic questions, and followed by the more complex and sensitive questions. The interview included 13 questions with alternatives (except questions with obvious answers such as age). The complete survey in Spanish (Castilian) with translation can be viewed in Appendix 1.

4.2.1 Interview technique

The idea of simply distributing surveys among farmers was abandoned after discussions with El Ceibo representatives. A few of the elder farmers were illiterate and their participation in the study would have been impossible using such method. Administrating the questionnaire by own accord is a good option for the researcher that is sufficiently fluent in local language, since it usually improves response rates (Overton ó van Dierman, 2003). The farmers were also used to being interviewed but less of filling out surveys. Simply distributing questionnaires could have caused misunderstandings. The interviews were conducted in Spanish. In two cases an interpreter was used to translate questions and answers into the Aymara language.

The researcher was always accompanied by a representative from the central cooperative. The representative, usually a technician, was well known to the farmers. This method had several advantages. Villages and areas where farmers lived were easily found and when there, the villagers that were cooperative members were immediately identified. Because it was a well-known person asking them to participate, very few declined to do so. The accompanying representative was also able to help the respondents to understand the questions and to make them feel comfortable to ask when they did not understand. Being accompanied by a representative of the central cooperative may also have had negative effects if participants felt pressured in giving a particular response (compare Overton ó van Diermen, 2003). The questions asked did not include any direct evaluation of the administration or organization, thus avoiding the most sensitive issues. In fact, some farmers did criticize the administration despite having a lower representative nearby, which suggests that the participants were not afraid to be honest.

As the researcher has a responsibility to keep identities of participants private (Scheyvens, et. al., 2003a), the easiest way to do so was to never document the names in the first place. Only cooperative belonging was noted.

4.2.2 Altering the questions and response alternatives

In general when conducting fieldwork, questions should be kept simple. Complex language can lead to misinterpretations and ambiguity (Overton ó van Diermen, 2003). The initial intention was to use the same type of language used in the Latinobarómetro survey, a commonly used database of Latin American countries. However, in accordance with consultations from El Ceibo staff, some questions were altered. Due to the fact that many farmers did not have Spanish as their first language, questions had to be reworded into more informal language so as to avoid misunderstandings. For instance regarding trust, the question “One can never be too careful when dealing with others” was re-formulated into “people generally can’t be trusted” and (if the question still wasn’t understood) “One can’t trust much in others”.

Admittedly, it was at times difficult to determine what box was most adequate to tick, as respondents sometimes refused to pick one of the pre-set alternatives as their answer. However some particular expressions were frequently used by the farmers to describe their state of health or life satisfaction, and those were all assigned to different boxes. Sometimes one box had several explanations. Exact formulations can be viewed in Appendix 1.

At first, the idea was to use a scale ranging from one to ten as alternatives to questions regarding health and life satisfaction. This plan was rejected however, as many farmers were unfamiliar with the concept of surveys with scaled answers. More alternatives would only have reduced the reliability of the study.

4.3 Variables

In order to adequately investigate long term effects of cooperative membership it was necessary to hold constant confusing variation. In order to identify relevant control variables, studies on populations with relatively close proximity to the Alto Beni region was consulted where available. Such studies include the Godoy et. al (2010) study of the pre-industrialized, Bolivian-Amazonian village of Tsimane, Landmann et. al. (2005) study of Brazil, and chapters from a book on quality of life in Latin America, edited by Graham ó Lora (2009). These studies are completed with universally tested relations. General findings suggest that happiness and life satisfaction is associated with health, education, relative and absolute income, community belonging, being female, sociability and high self-esteem among other positive psychological traits (Bonini, 2008, Bourne et. al., 2010, Lora et. al., 2009, Cárdenas et. al., 2009, Salinas-Jiménez, 2010). Although consumption is considered the main source of utility by traditional economic

theory, it has been shown that income cannot substitute important facets of life such as health and friendship (Lora et. al., 2009). SRH has been found to be impacted by age, income, education, area of residence, being male, economic shocks, and social trust (Bourne et. al, 2010, Landmann et. al. 2005, Gunasekara et. al, 2010, Godoy et. al., 2010, Brenes-Camacho, 2011, Jen et. al, 2010).

4.3.1 Health, life satisfaction, and membership length

Life satisfaction and self-rated health were measured on a gradation scale with four alternatives. Similar methods have been used by other scholars in comparable studies (Bourne et. al., 2010, Godoy et al, 2010, Landmann, 2005, Brenes-Camacho, 2011, Lora et. al. 2009:98). Lora et. al. (2009) comment on the fact that answers to life satisfaction usually are concentrated to the middle answers. According to them, this is not to be interpreted as the gradation being unimportant. For instance, averages have been shown to differ between low and high income countries.

While health was measured on the family level, life satisfaction was measured on the individual level. It is reasonable to believe that while it is relatively simple to determine the health state of one's family members, it is more difficult to know their level of life satisfaction. This is so because health is usually demonstrated physically (at least morbidity and disease). On the contrary, life satisfaction is not demonstrated physically but can only be known by asking the actual person.

SRH and life satisfaction have in common that they are affected by cognitions and subjectivity. Thus, it is to be expected that they are similarly affected by cooperative membership. In the Latin American context, SRH and self-declared levels of life satisfaction are usually closely related (Lora et. al., 2009). However, there are studies showing no association between SRH and life satisfaction at all (Bourne et. al., 2009). When it is related, causality between health and life satisfaction probably goes both ways e.g. good health improves life satisfaction, while life satisfaction improves health (Lora et. al., 2009). For this study, family health was measured rather than individual health which makes it more reasonable to believe that the health variable has bigger effects on life satisfaction, rather than the other way around. It is reasonable to believe that a family member's bad health affects life satisfaction negatively. It is more difficult, however, to see how the individual's life satisfaction would affect its family's health more than marginally.

All participants were asked in what year they joined their cooperative. The number of years of membership was then calculated. The reason for not asking directly how many years the participant had been member was to avoid miscalculations. Still, farmers that had been members a long time commonly said they were unsure of the exact year in which they joined. Therefore, recall accuracy might be weaker the longer the membership. Sometimes the farmers simply said they joined the cooperative in the founding years, in which case it was possible to consult official statistics provided by El Ceibo. Young persons were always asked whether also their parents were members. In the case where a son or

a daughter of a member participated, the year in which their parents joined was documented. The reasoning for this is that if there is in fact a long term effect of membership, the young people who have been growing up in a member family should already have been affected by it, independently of when they themselves became members.

In the regressions, the membership length was also tested for non-linear relation, since it is reasonable to expect the positive effects to level out after some time.

4.3.2 Individual traits

Individual traits of age and sex were used as control variables. While age is expected to be negatively related to health for natural reasons, it is more uncertain of its relation with life satisfaction. In the Latin American setting, elders have generally demonstrated higher levels of life satisfaction (Lora et. al. 2009).

Considering previous studies, being female is expected to impact positively on life satisfaction. Being male has generally been found to impact positively on health. When the health of the whole family, typically consisting of both men and women, is measured, the gender effect should be slightly less present. A gender effect in the health regression should be interpreted as difference in perceptions between men and women and not difference in objective health.

4.3.3 Household material resources

It is reasonable to believe that the health and life satisfaction are affected positively by income. The family income is assumed to be of greater importance than the individual income, since resources are expected to be shared among family members. Income will be used as a control variable so, that positive effects caused by higher income levels can be separated from other effects.

Godoy et. al, (2010) argue that among rural populations, monetary income is problematic to measure, since a big part of the farmers' consumption is goods they themselves produced. Asking an individual that struggles to support his or her family about their income may also reinforce feelings of ineptitude (Scheyvens et. al., 2003b). Therefore, other types of measures of income were used. A household member's possession of a computer was used as an income measure. Studies of the Latin American context show that the possession of physical assets such as computers is associated with higher life satisfaction (Lora et. al., 2009).

It is common that parts of the member families have occupations outside of the agriculture. According to El Ceibo staff, many families substantially increase their incomes by having small shops or similar. For this reason, additional income source was chosen as an indicator of income. In addition, having family members working in other fields may function as a risk diversification strategy.

The Bebbington et. al. (1996) study of El Ceibo cooperatives suggested two other indicators of higher income, additional crops other than cacao and location of the plant. Additional crop was included in the survey but excluded from the analysis, since almost all of the participants grew other types of crops apart from the cacao. Location of the plant is covered by the cooperative belonging variable.

4.3.4 Individual resources

Education is measured as an individual resource. In the Alto Beni region, few of the interviewed had parents with an education higher than primary level. Thus, parents' education was already held fairly constant. Among younger people the educational level varied, however. By including formal education in the analysis, positive effects of training generated from outside of the cooperative sphere is captured. Possible positive effects of training provided by El Ceibo should be caught by the membership length variable.

For simplicity and in order to improve recall accuracy, levels of education (none, primary, secondary, and superior) were used instead of years of schooling. In the analysis, the educational levels were used as dummy variables with no education as reference variable.

Many types of personal traits, such as social status, sociability, and income are strongly related to higher education (Bonini, 2008, Lora et. al., 2009). Hence, controlling for education may capture other kind of variance in addition to the pure educational effect.

4.3.5 Cooperative membership

In comparison to urban areas, rural areas generally have more easily identifiable communities, since they are separated by geographical distance (Godoy, et. al. 2010). The members within a cooperative affiliated to El Ceibo all live and operate with close geographical proximity to each other (Hillenkamp, 2006). Thus, the cooperatives constitute good entities for measuring community belonging, since members of a cooperative are neighbors and joined together in networks.

Shocks, such as plant diseases, have affected different regions of Alto Beni unequally. Thus, when controlling for cooperative membership such aspects should be captured. Also differences of economic inequality between neighbors, community assets, and levels of aspirations, and to some extent income will be controlled for by including cooperative membership in the regression.

Two important additional aspects emerge when controlling for cooperative membership. The first is that social capital in the forms of bonding and kin-ship among neighbors is captured by this variable rather than the membership length variable. The second is that the variation in membership length is reduced, since most members within a cooperative joined about the same time. There are

exceptions, including members joining old cooperatives in recent years, but these are quite few.

4.3.6 Social traits

Social aspects are used in order to better understand social capital aspects of membership length. If a positive relation of membership length on life satisfaction, and on health is reduced when controlling for social aspects, it suggests that early members are more social, thus causing the effects of increased levels of life satisfaction with time. The higher levels of social traits may be a product of long membership, which has made people more social. It may also be explained by a tendency of individuals with social traits being more inclined to join cooperatives at an early stage.

If a positive relation between membership length and health, and between membership length and life satisfaction is unchanged, the relation has probably been caused by other factors than social capital. If a positive relation is increased when controlling for social traits, it may indicate that differences in sociability cause variation of life satisfaction, and only when controlling for these variations the effects of membership length is clearly demonstrated.

Participation in organizations and trust were used to measure social traits of the individual. Looking at previous studies, these are expected to be positively related to both health and life satisfaction. Participation in organizations included regular church visits (not including those who said they rarely visit church), being member of farmers' unions or other types of associations (like the banana association Banabeni) or organizations (such as those aiming to increase awareness of climate change). In the data, no differentiation was made between the types of organizations. Solely the number of organizations was used in the analyses.

4.4 Limitations

The main limitation for this study was the scarce time available to collect data. For a more exhausting statistical investigation of livelihoods, the DFID (1999c) recommends a time period of four months for collecting data. They recommend the researcher to follow three steps: careful planning, testing of the survey and collecting data. All of these steps were followed in this study but in a time period equivalent of only a fourth of the recommended time. This has contributed to some disadvantages. A longer testing period could have contributed to changes in income variables: the inclusion of more physical assets such as a refrigerator, washing machines and television and the exclusion of unnecessary questions such as the one regarding additional crop. Due to the short time of planning, a potentially important control variable, namely marital status, was unfortunately not included. Marital status could have contributed in making the estimations

more accurate. However, the majority of the members were married and the therefore, the exclusion of marital status should not cause any major bias to the study. Better planning could also have detected the difficulties of interpreting family health as a variable. Asking about individual and family health separately would have facilitated the analysis.

Although containing some obvious weaknesses, the current study should be able to contribute with some insights, especially when supported by and compared to similar studies.

5 Results

In general, the farmers were fairly satisfied with their lives. Only 3 % said they were not satisfied at all, while 7 % were very satisfied. Answers were centered to the two middle options "somewhat satisfied" (47 %) and "Satisfied" (43 %). The health evaluations were slightly less optimistic, where the biggest group (56 %) said their family's health was fair, and the second biggest group answered that it was good (38 %). Few considered their family's health to be bad (4 %), but even fewer (less than 2 %) considered it to be very good. More descriptive statistics can be viewed in Appendix 2.

5.1 Main regression results

Quite unexpected, the result of how membership length has affected health and life satisfaction goes in different direction. A small positive association of membership length was found on life satisfaction. On health, the impact seems to be negative.

5.1.1 Effects on life satisfaction

In the regression of how membership length has affected life satisfaction, a small in effect, quadratic relation was found. The relation is only marginally statistically significant, however. Considering regression 3 the linear term is significant at the 10 % level, with the quadratic term bordering the same level ($p=.121$). At this stage, the positive effect of a 10 year long membership is 16 % of a step. This effect might seem modest, but it is in fact bigger than the effect of having a computer, which only increases satisfaction with 14.5 % of a step. The computer variable also has higher p-value (.259). Including education in the regression decreases the effect of membership length and cause a slight increase in p-values. This tendency is continued when controlling for social variables and cooperative belonging. The modest effects of the variables in the regressions is caused by little variation in the dependent variable, life satisfaction. As mentioned previously, 90 % of participants answered one of the two middle options. Considering that the one step between the middle options is the most important difference, an improvement of say 16 % of a step is actually a difference to be reckoned with.

The finding of a quadratic relation should not be viewed as precise measure of when the positive effects come about and when they cease to be generated. If they were, it would mean that (all else held equal), the maximum positive effect would

occur at around 15 years of membership. After around 25-30 years being a member ceases to bring about positive effects. The encountered quadratic relation is here interpreted as an indicator that positive effects are diminishing with time.

5.1.2 Effects on health

Contrary to the expected, the regressions show a negative relation between membership length and family health. This association is increased when controlling for income variables, sex, and education. When co-operative belonging is controlled for, the relation turns non-linear. At this stage, the regressions suggest that after 30 years, being a member starts to have positive impacts on health. Surprisingly, this is about the same point where membership ceases to generate positive effects on life satisfaction. Adding social variables to the equation, the non-quadratic term becomes stronger in effect and statistically significant.

5.1.3 Control variables

Most control variables have expected effects. Age and sex variables offer few surprises (see discussions in chapter 4), and will not be further discussed here. Superior education has a positive impact on both life satisfaction and health. The effect is reduced when social variables and cooperative belonging are included. This strengthens the ideas discussed in chapter 4 about higher education picking up on other factors in addition to pure educational effects. Those with higher education seem to be more trustful and have better social relations. As it seems, the benefits of higher education is not solely accrued to the individual. The educational effect being reduced by cooperative belonging suggests that the whole community experience increased levels of well-being as members become well educated.

There are variables that offer a few surprises. The income variables do not always impact in the expected way, and the group without formal education show unexpectedly high levels of well-being. These findings will be discussed in the following chapter.

Table 3: Regressions on life satisfaction

Dependent variable: Life satisfaction (4= Very satisfied, 3=Satisfied, 2=Somewhat satisfied, 1= Not at all satisfied)

	1	2	3	4	5	6	7
Constant	2.502***	1.88***	1.862***	2.036***	1.54***	2.074***	1.471**
Age	-.003	.000	.001	.003	.002	.003	.002
Memb. years	.025	.028*	.026*	.024	.029	.018	.03
Memb. years ²	-.001	-.001	-.001	-.001	-.001	.000	-.001
Male	-.03	-.077	-.088	-.113	-.08	-.133	-.102
Health		.206*	.218*	.188*	.23*	.144	.21
Ad. Income			-.04	-.084	-.039	-.142	-.069
Computer			.145	.057	.242	.018	.209
Prim. educ.				-.139	-.101	-.187	-.149
Second. educ				-.119	-.145	-.138	-.177
Sup. educ .				.296	.004	-.041	-.245
Coop. belonging					x		x
Trust						.067	.073
Associations						.091	.032
R²	.023	.051	.066	.097	.308	.068	.242
N	138	138	137	136	136	127	124

* = p<10% ** = p < 5% *** = p < 1%

- a) Reference group is female
- b) 4= Very good, 3= Good, 2= Fair, 1= Bad
- c) Reference group does not have an additional income source
- d) Reference group does not possess a computer
- e) Reference group does not have any formal education
- f) Cooperative belonging is controlled for when marked with x. Results presented separately.
- g) 3=The majority can be trusted, 2=Known people can be trusted, 1=People generally can't be trusted,

Table 4: Regressions on family health

Dependent variable: Health (1=Poor 2=Fair 3=Good 4=Very good)

	1	2	3	4	5	6
Constant	3.062***	2.293***	2.29***	2.263***	2.669***	2.599***
Age	-.013***	-.01***	-.011***	-.007*	-.008*	-.009**
Memb.years	-.013	-.014	-.015	-.018	-.03	-.034*
Memb.years ²	.000	.000	.000	.000	.001	.001
Male			.181*	.181*	.158	.091
Ad. Income		.431***	.409***	.372***	.399***	.32***
Computer		.032	.036	-.026	-.124	-.091
Prim. educ.				-.149	-.165	-.176
Second. educ.				.046	.074	.041
Sup. educ.				.169	.105	.044
Coop. belonging					x	x
Trust						.08
Associations						.092
R²	.123	.253	.273	.295	.421	.443
N	138	138	137	136	136	124

* = p<10% ** = p < 5% *** = p < 1%

- a) Reference group is female
- b) Reference group does not have an additional income resource
- c) Reference group does not possess a computer
- d) Reference group does not have any formal education
- e) Cooperative belonging is controlled for when marked with x. Results presented separately.
- f) 3=The majority can be trusted, 2=Known people can be trusted, 1=People generally can't be trusted

Table 5: Cooperative belonging effects

Reference group: Cooperative Santa Martha

Coop./Regression	Life satisfaction		Health	
	5	7	5	6
San Jose	.277	.261	-.367	-.258
Sapecho	.268	.32	-.136	-.118
Sajama	.519	.458	-.051	-.326
San Antonio	-.292	-.213	-.839**	-.726**
24 de septiembre	-.008	.073	.285	.317
Agua Clara	-.017	.041	-.155	-.041
Tropical	.527	-	-.068	-
Puerto Carmen	.932*	-	-.109	-
San Juan	1.134**	-	-.429	-
Oro Verde	.687	.658	-.093	-.226
Nueva Israel	-.025	.051	-.397	-.383
Villazon	.171	.184	-.329	-.375
Santa Rosa	-.24	-.207	-.232	-.211
Brecha T	.556	.551	.031	-.766*
Colorado	.468	.507	-.328	-.26
Flor de Cacao	-.164	-.111	-.553	-.439
Simay	.753	.795	-.298	-.19
Integral Unificada	-.013	.047	-.142	-.102
Nueva Esperanza	.327	.457	-.503	-.441
Rio Jordan	.125	.004	-.003	.052
San Miguel Suapi	.763**	.804**	-.489	-.493

* = p < 10% ** = p < 5% *** = p < 1%

a) When marked with ó :excluded because only one member in the cooperative

5.2 Additional regressions

Some additional regressions, that are not shown, were carried out. These will briefly be discussed here. Firstly, an interaction term between age and possession of computer was included. This was based on a suspicion that elders chose not to have computers because they are old fashioned, and not because they cannot afford it. However, this interaction term showed very small or no effects, and was far from statistically significant. Thus, it was excluded from the analyses.

A by an El Ceibo representative outspoken problem is that the female members are less involved with the co-operatives. Because of this, an additional regression with the males only was made, in order to see if any variables were drastically affected. This was not the case, however, as only small differences emerged. The positive relation of life satisfaction and membership length was stronger in effect, but still with p values bigger than 10 %.

In order to analyze whether the negative effect of membership on health can be explained by aging parents, a separate run with the participants of 35 years or younger was made. In this run the effects of membership on health actually appeared positive. This will be further analyzed in the discussion.

Two of the education dummies had VIF values around 7. As a rule of thumb, values of 10 or above are considered highly collinear (Gujarati, 2003:362). When having the education as a scale rather than dummies, the VIF value was only around 2. In order to test whether bias caused by multicollinearity existed, a separate regression with education as a scale, rather than dummies, was made. This impacted only marginally on other variables, however, and lowered R square values.

6 Discussion

Although small in effect and marginally statistically significant, it seems cooperatives do improve over-all well-being (measured as life satisfaction). This effect seems to be caused by a combination of benefits. The effect is reduced and p-value is increased when including variables of income, education, social traits and cooperative belonging. The positive relation is never completely reduced, which strengthens the assumption that cooperatives affect their members in complex ways. After including all control variables, benefits such as bridging and linking effects, feelings of pride, purpose, and belonging, more available options, and increased aspirations remain as possible contributors to increased well-being. In this chapter the possibility of the effect being caused by inverse causality is discussed. The low significance may in part be caused by rather few cases that were included

On the contrary to life satisfaction, the effect of membership appears to impact negatively on family health. This chapter includes a deliberation on why it appears to be so.

6.1 Discussion on general findings

As expected, family health is an important determinant of life satisfaction. It is among the strongest in effect and is for the most part marginally statistically significant. In regressions of several Latin American countries, Lora et. al. finds that health was the best predictor of life satisfaction, and statistically significant to the level of 1 %. The smaller effect and significance found in the current study may be explained by the family being the measurement instead of the individual, which causes a weaker direct link between the two. Thus, as expected, the two variables are related but far from the same thing.

Looking at regressions on both life satisfaction and family health, the membership variable is impacted negatively as income variables, education, and social variables are included. Thus, it seems that for some reason, early members have slightly better income, education, and are more sociable. Given the theory presented in this thesis, it is reasonable to believe that it is membership in the cooperative that has caused this change. However, there are also studies showing that early adopters of agricultural innovations (such as cooperatives using organic methods) have better economy, are better educated, and are to a bigger extent members in farmers' organizations than late adopters (Boz ó Akbay, 2005, Wollni ó Zeller, 2007). How can one determine that, in the case of El Ceibo, farmers with higher income, education, and that are more sociable were more inclined towards

joining the cooperatives at an early stage? It is not possible to rule out this suggestion by the data presented in this thesis. However, it is unreasonable to believe that the characteristics of early members are what causing all of the effect for the following reasons:

- Previous findings show that a small group of first joiners have mentioned particular traits (Boz ó Akbay, 2005). In the current study it seems that long term members (30 years or longer) are less satisfied than those that have been members around 15 years. This suggests that in the case of El Ceibo, the first joiners did not have any particular socioeconomic traits that make them more satisfied. It is of course possible that the intermediate joiners had such traits. In addition to contrasting previous findings, it is difficult to find a reasonable explanation to why intermediate joiners would be special. It is much more feasible that it is the membership that has caused such tendencies.
- As discussed earlier, the membership entry fees to join El Ceibo cooperatives have become increasingly more expensive with time. This fee is a considerable amount and is not affordable to all. Therefore, the farmers with an economic situation that just allowed them to be able to join in earlier years do not have that possibility any longer. The average income of the entry members should thus be higher in recent years than it was twenty, thirty, or forty years ago. It cannot be guaranteed, however, that early joiners generally had lower income. Thus the effects caused by income should be interpreted cautiously.
- The early joiners of El Ceibo cooperatives are in general not more educated than the later joiners. Out of those of 45 years of age or older, the average of those that have been members over 30 years is marginally higher than the over-all average of this group (2.17 compared to 2.09). The lower average of the latter group is caused by a bigger percentage of farmers that completely lacked education. However, the farmers with primary education were the least satisfied of all education groups, not the non-educated. Thus, the early member group's high concentration of farmers with primary education should impact them to be less satisfied, not the other way around. Instead, the appearance of older members being more educated must be caused by their sons and daughters (that are counted as old members in the data) to a greater extent having superior education.
- The earliest joiners of El Ceibo cooperatives have a lower average of trust and an equal average of involvement in other organizations (once again, comparing the oldest members with the over-all group of those being 45 years of age and older). Thus the very oldest members are not particularly social.
- Joining an El Ceibo cooperative is not completely up to the individual, since a member cooperative is community based and

requires a minimum of members. A farmer that lives far away from a member-cooperative may not have the possibility to join unless he or she can convince the neighbors to jointly create a cooperative. It is obviously not the case that the earliest communities to join are the most satisfied. Looking at the cooperative of San Miguel that was created in 2011 for instance, it has some of the highest averages of satisfaction.

Taking all these factors into account, it does not seem that particular characteristics of early joiners have caused the positive effects of membership length. Instead slightly higher levels of income, superior education, and sociability seem to be caused by the membership in itself.

The health part of well-being is, as it appears, negatively affected by membership length. However, this may in fact be an illusion caused by the measurement entity being the family. If the parents' health is improved, they are likely to live longer. Still, they might be affected by diseases and discomforts that are typical for elders. Thus, as long as a person's parents are alive, it will affect the evaluation of his or her family's health negatively. Consequently, if the parents die premature deaths, it may actually appear to be positive for family health. A separate analysis, including only the participants of the age of 35 or younger, supports this argument. Doing so is interesting because the majority of those being 35 years old or younger should have parents still living. The effect of membership then turns positive ($\beta = 0.017$, linear relation), but is not statistically significant. However, as this regression only contains 29 cases, it is not completely reliable.

The appearance of a quadratic relation of membership on health might further strengthen the assumption that the measurement entity is causing bias. After 30 years of membership, the majority may not have parents still living, thus causing the seemingly non-linear effect. Still, it would be overly optimistic to state that the health seems to have improved with membership. It is only concluded here that it is still possible that this is the case. Further studies can enable an improved understanding of these data. As discussed in chapter 3, the possible ways in which El Ceibo could have played a role for improving members' health is more or less limited to reducing stress. Of course, increased financial capital could be spent on health improving measures. However, if the understanding of health is low in the area, financial capital is likely to be spent on other goods. It seems that while cooperatives by nature increase life satisfaction, it takes careful and deliberate actions to improve health.

6.2 Additional comments

The analyses did offer some surprises. Like the fact that in the regressions, it appears that having no education at all, rather than a little, is better for both health and life satisfaction. There are studies in which the poorest groups of society have been found to be happier than other groups. In those cases factors such as low

expectations or unawareness of the precarious situation have caused this effect (Cárdenas et. al., 2009). The people that completely lack education might have fewer expectations and be less aware of their health situation relates to that of others. It has also been shown that the well-being of those that have just escaped poverty is undermined by the fear of falling back into poverty. Reported well-being of these groups is often lower than that of poorer groups (Cárdenas et. al, 2009). Although none of the El Ceibo members belong to the very poorest groups of society, this tendency might partly explain why the primary education-group is the least satisfied.

Studies of La Paz have showed that living in areas where the concentration of indigenous people is high has in itself negative impacts on satisfaction (Lora et. al., 2009). Thus, a different interpretation of why the uneducated declare higher levels of well-being is that they are the ones that gain the most from the increased aspirations and opportunities offered by El Ceibo.

Furthermore, the income variables did not always seem to have as big effect as expected. Having a computer is even slightly negatively related to health and additional income source is slightly negatively related to life satisfaction. It is possible that income is less important in a rural, kin based society, where neighbors are more closely tied together (Godoy et. al., 2010). In such a society, goods might be shared to a bigger extent than in more anonymous societies like outskirts of a big city.

In general, it has been found that income cannot replace important facets of life such as health and friendship. For a Latin American for instance, the average value of friendship is about seven times his or her income (Lora et. al., 2009). This may explain why cooperative belonging cause considerably stronger effects on life satisfaction than does income variables. Living in a community with good quality social relations is much more important than income.

The income variables may possibly also have picked up on other effects in addition to just income levels. For instance, those with jobs outside the agriculture may subject their bodies to less physical strain, which in turn give positive effects on health.

7 Conclusions

From the results of the regressions presented in this study, it appears that membership length in fact does have a small positive impact on the overall well-being. This positive effect seem to be caused by a combination of benefits such as increased incomes, promotion of superior education, and improved social capital, but perhaps also by senses of belonging and purpose, more available options, and increased aspirations. It is argued that the positive relation is unlikely to have been caused by reversed causality, at least not completely. Theoretically, early joiners could have special socioeconomic traits which cause them to be more satisfied with life. This is however unlikely, since the earliest members seem to be less satisfied with life than the middle-term members. Furthermore, they do not have higher averages of education and sociable traits. Also, the entry into an El Ceibo cooperative is not entirely up to the individual. Member cooperatives are community based, where members operate with close geographical proximity to one another. Thus, an individual in the area that wishes to join a member cooperative might not be able to do so if a member cooperative is not present in his or her community. Further studies can bring more clarity to the causality of the positive relation between membership length and life satisfaction.

On the contrary to life satisfaction, the relation found on family health and membership length was negative. This appearance may, however, have been caused by an actual health improvement. The reasoning behind this is that if parents live longer they may decrease the "health average" of the family. Only with further studies can this relation be properly analyzed.

Considering the grand plans organizations such as the World Bank, the UN, and the ILO have for cooperatives, one might have expected this study to deliver more evident impacts of membership. It is important to remember that even when bad government policies are absent, like in the case of El Ceibo, agricultural cooperatives aren't miracle workers. It is possible that they can improve members' health, but in order to do so, they probably need support and encouragement.

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9 Appendix

9.1 Appendix 1

Questions asked in Spanish (gender was noted by researcher without asking):

1. ¿Cual es su edad?/ ¿Cuantos años tiene Ud.?
2. ¿A que cooperative pertenece Ud.?
3. ¿En que año se afilió a su cooperative?
4. ¿Cual es su grado de instrucción?
 - a. Ninguna
 - b. Primaria
 - c. Secundaria
 - d. Universitaria/Superior
5. Ud. o algún miembro de su hogar posee una computadora? /En su casa, ¿hay computadora?
 - a. Sí
 - b. No
6. En su parcela, ¿tiene Ud. otra producción aparte del cacao?
 - a. Sí
 - b. No
7. En su parcela, ¿tiene árboles maderables?
 - a. Sí
 - b. No
8. Aparte de su parcela, ¿Ud. o algún miembro de su familia, con que vive, tiene otro fuente de ingreso? / En su casa, ¿hay persona que trabaja con algo fuera de la agricultura?
 - a. Sí
 - b. No
9. En términos generales, ¿Diría Ud. que está satisfecho con su vida? / Está Ud. conforme con la vida? Cómo vive Ud, con la parcela, y con la vida en general, está Ud. satisfecho? ¿Diría Ud. que estáí
 - a. Muy satisfecho
 - b. Satisfecho/Bastante satisfecho
 - c. No muy satisfecho/Poco satisfecho/No tanto/Regular, nada más
 - d. Para nada satisfecho/No satisfecho
10. Hablando en general, ¿Diría Ud. que se puede confiar en la mayoría de las personas o que uno nunca es lo suficientemente cuidadoso en el trato con los demás? / ¿En general, se puede confiar en las personas? / Confie Ud. en las personas? Diría Ud. queí ?
 - a. Se puede confiar en los demás / Unos 70% son confiables

- b. Solamente se puede confiar en personas conocidos / Se puede confiar en los socios de la cooperativa
 - c. Uno nunca es lo suficientemente cuidadoso / No se puede confiar mucho, hay que tener cuidado /No confie en las personas / Solamente se puede confiar en la familia
11. ¿Cómo está la salud de su familia estos días? ¿Diría Ud. que estáí ?
- a. Muy buena
 - b. Buena
 - c. Regular
 - d. Mala
12. En los próximos doce meses, ¿Cree Ud. que su situación económica y la de su familia seráí ? / Al año que viene, ¿Cree que su situación económica, ingresos y tal, seráí ? / En un año, va a estar mejor económicamente que ahora o peor que ahora? O va a estar igual?
- a. Mejor
 - b. Igual
 - c. Peor
13. ¿Es Ud. miembro de alguna asociación fuera de la cooperativa? Ud. va frecuentemente a la iglesia? ¿Es miembro de algún sindicato? Algúna asociación, cómo Banabeni? ¿Otro tipo de organización?
- a. 0
 - b. 1
 - c. 2
 - d. 3
 - e. 4

English translation:

1. How old are you?
2. In which cooperative are you member?
3. In what year did you join the cooperative?
4. What is your level of education?
 - a. None
 - b. Primary
 - c. Secondary
 - d. University/Superior
5. Do you or somebody in your home possess a computer? Is there a computer in your house?
 - a. Yes
 - b. No
6. In your parcel, do you produce crops other than cacao?
 - a. Yes
 - b. No
7. In your parcel, do you have òÁrboles maderablesö?
 - a. Yes

- b. No
8. Outside of the parcel, do you or does anybody in your home have another type of economic income source? / In your home, is there anybody working with something apart from agriculture?
- a. Yes
 - b. No
9. Speaking generally, would you say that you are satisfied with your life? Are you content with your life? The way you live, with your parcel, and the life in general, are you satisfied?
- a. Very satisfied
 - b. Satisfied / quite satisfied
 - c. Not very satisfied / Somewhat satisfied / Not that much / Fair
 - d. Not at all satisfied / Not satisfied
10. Generally speaking, would you say that the majority of people can be trusted or would you say that one can never be too careful when dealing with others? In general, can people be trusted? Do you trust others? Would you say thatí ?
- a. The majority can be trusted / about 70 % can be trusted
 - b. One can only trust familiar people / The other members of the cooperative can be trusted
 - c. One can never be too careful when dealing with others / One cannot trust much, one has to be careful / you don't trust much in others / Only one's own family can be trusted
11. How is the health of your family these days?
- a. Very good
 - b. Good
 - c. Fair
 - d. Bad
12. In twelve months, will your economic situation beí ? In a year's time, do you think that your economic situation, income and such, will beí ? In a year's time, will you be better off economically or worse off? Or will it be the same?
- a. Better
 - b. Unchanged
 - c. Worse
13. Do you frequently visit the church? Are you a member in a workers' union? Are you a member in another type of association, like Banabeni? Other organization?
- a. 0
 - b. 1
 - c. 2
 - d. 3
 - e. 4

9.2 Appendix 2

Descriptive statistics about participants

Sex	Female	Male			Missing	Total
	41%	59%				100%
Age (Mean = 46)	18-30	31-50	51-77			100%
	21%	39%	40%			
Computer possession	Yes	No				100%
	33%	67%				
Additional income source	Yes	No			1%	100%
	45%	54%				
Education	None	Primary	Secondary	Superior	1%	100%
	6%	48.5%	32.5%	12%		
Association membership	0	1	2	3	4	7%
	22%	39%	23%	7%	2%	100%
Can be trusted:	Few	Known	Majority			100%
	30%	59%	11%			
Membership years (Mean = 20,5)	0-14	15-29	30+			100%
	38.5%	30.5%	31%			

Representatives from each cooperative (in total 138):

1. Santa Martha	10	12. Nueva Israel	7
2. San José	7	13. Villazon	10
3. Sapecho	10	14. Santa Rosa	10
4. Sajama	2	15. Brecha T	4
5. San Antonio	3	16. Colorado	12
6. 24 de septiembre	9	17. Flor de cacao	3
7. Agua Clara	3	18. Simay	2
8. Tropical	2	19. Integral Unificada	10
9. Puerto Carmen	2	20. Nueva Esperanza	7
10. San Juan Suapi	2	21. Rio Jordan	9
11. Oro Verde	2	22. San Miguel Uachi	12