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**SMALLHOLDERS AND “FINE” COCOA’S
SUPPLY CHAIN: DESIGNING AN
EXPERIMENT ON SOCIAL DILEMMAS IN
COCOA “QUALITY MANIPULATION”**

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Abstract

Ecuador is the largest producer of fine cocoa in the world, which is highly appreciated in the international gourmet chocolate markets. However, market opportunities for its supply chain actors are threatened by quality irregularities reported by some clients. Fine cocoa quality manipulation is a practice performed by small farmers and other supply chain actors where fine and bulk cocoa beans are mixed in order to maximize their individual profits. This research is focused on the comparison between the social dilemma theory and quality manipulation dynamics and implications in the fine cocoa smallholders' supply chain. In addition, collective marketing as a promissory form of collective action to overcome such constraints, is explored. This study is important because a better understanding of *how* and *why* smallholders face a particular social dilemma in a certain way could contribute to the design and implementation of more suitable strategies for improving the fine cocoa supply chain from its foundations. The research approach adopted in this dissertation includes a wide review of relevant literature, primary data collection through qualitative surveys and the examination of experimental games as a fitting methodological tool to study this social dilemma and identify possible enhancers of cooperation. The findings from this research show that the theory of social dilemmas can partially explain quality manipulation practices and its implications; since private and social interest diverges along the supply chain and "quality manipulation" can increase limited individual revenues which at the same time affect market opportunities at a national and local level. A second finding is that an experimental approach has the potential to deeper evaluate farmers confronting a "quality manipulation" social dilemma and possible drivers for collective action. This thesis has followed few first steps in the applications of some learned lesson on economic experiments already explored in other research areas. Therefore, rather than conclusive, it is considered an exploratory step theoretically as well as methodologically. Finally, this dissertation recommends further research on the use of field experiments as an exploratory and participatory research tool to study smallholders' social dilemmas and enhancers of cooperation in the supply chain.

Keywords: cocoa supply chain, smallholders, social dilemmas, collective action, experiments

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Contents

Abstract	I
Acknowledgment	II
1 Introduction	1
1.1 Problem Statement	2
1.2 Research questions and working hypothesis	2
1.3 Specific objective and expected outcomes	3
1.4 Contribution and originality	5
1.5 Thesis structure	5
2 Conceptual Framework	7
2.1 Introduction	7
2.2 Cocoa varieties and world markets	7
2.3 “Fine” Cocoa in Ecuador.....	9
2.3.1 Traditional and specialized fine cocoa supply chain.....	12
2.3.2 Cocoa quality manipulation practices: National Implications.....	14
2.3.3 Cocoa quality manipulation practices: Small farmers constrains and opportunities.....	15
2.3.4 National strategies to repositioning Fine cocoa.....	17
2.4 Summary	18
3 Theoretical Framework	20
3.1 Smallholders and market access.....	20
3.2 Collective marketing as a form of small farmers’ collective action.....	21
3.2.1 Assuring quality through farmers’ collective action	23
3.2.2 Evidence from Latin America	25
3.3 Multiple-person social dilemmas	26
3.4 Solving social dilemmas through collective action.....	27
3.4.1 Group Identity	29
3.4.2 Group cohesion.....	31
3.4.3 Group Identity and group cohesion in quality assurance	32
3.5 Summary	32
4 Research Methods	34
4.1 Introduction	34
4.2 Research Strategy	35
4.2.1 Qualitative survey.....	36
4.2.2 Field experiments	37

4.3	Data collection.....	40
4.3.1	Qualitative survey.....	41
4.3.2	Field experiment.....	43
4.4	Framework for data analysis	43
4.4.1	Semi-structured interview	43
4.4.2	Field experiment.....	44
4.5	Summary	45
5	Results	47
5.1	Outcome 1	47
5.1.1	“Quality manipulation” dynamics and consequences: traditional supply chain.....	47
5.1.2	Fine cocoa sanctions’ implications for small farmers : traditional supply chain	48
5.1.3	“Quality manipulation” dynamics and consequences: specialized supply chain	49
5.1.4	Fine cocoa sanctions’ implications for small farmers: traditional supply chain	50
5.1.5	The role of social dilemmas in the quality manipulation practices within the supply chain.....	51
5.1.6	The role of collective marketing as a form of collective action in the eradication of quality manipulation practices within the supply chain.....	51
5.2	Outcome 2	54
6	Experimental Design and Protocol for trial experimental game	55
6.1	Hypotheses	56
6.2	The Subjects	56
6.3	The Game	57
6.4	The treatments	58
6.5	The protocol	60
7	General Conclusion	64
7.1	Research Objective 1: theory vs. practice	64
7.2	Research Objective 2: Experimental game.....	65
7.3	Weaknesses of the study.....	66
8	References	68
9	Annex.....	76

List of Tables

Table 1 Requirements for fine cocoa in Ecuador	11
Table 2 Research strategies described by Biggam (2008).....	36
Table 3 Experiment taxonomy proposed by Harrison and List (2004)	39
Table 4 Categories and methods for qualitative data collection.....	42
Table 5 Framework for qualitative data analysis	44
Table 6 Framework for development and analysis of trial design field experiment	44
Table 7 Experimental treatments.....	59
Table 8 Experiment form used in the pretest during the workshop	61
Table 9 Table of answer for trial experiment	63

List of Figures

Figure 1 Thesis structure	4
Figure 2 Cocoa's world production: Quality and volume. Source: PANLIBUTON, 2004	8
Figure 3 Cocoa exports in January 2012: National and CCN-51 cocoa. Source: ANECACAO, 2012.....	12
Figure 4 Traditional and specialized cocoa supply chain. Source:.....	13
Figure 5 Traditional and Specialized chain in MCCH.	16
Figure 6 Threats of opportunistic behavior in collective marketing (Ton, 2011)	24
Figure 7 Pathway from research question 1 to the first thesis outcome	47
Figure 8 Graphic representation of the quality manipulation problem and consequences.....	53
Figure 9 Pathway from the research question 2 to the second thesis outcome	54

List of Annexes

Annex 1 Areas where disintegrative tendencies in collective marketing are located.....	76
Annex 2 Interviewees, communication channel and main topics of discussion	78
Annex 3 Fragments of an interview with a public server.....	80
Annex 4 Location where fine cocoa is produced	83
Annex 5 Extract of the experimental design of the public bad game designed by Sonnemans et al (1998).....	84

List of Abbreviations

ICCO	International Cocoa Organization
MAGAP	Ministerio de Agricultura, Ganadería, Acuacultura y Pesca
FAO	Food and Agriculture Organization of the United Nations
ANECACAO	Asociación Nacional de Exportadores de Cacao
AGROCALIDAD	Agencia Ecuatoriana de Aseguramiento de la Calidad
MRECI	Ministerio de Relaciones Exteriores, Comercio e Integración
INIAP	Instituto Nacional Autónomo de Investigaciones Agropecuarias
HU	Humboldt University of Berlin
ASU	Arizona State University
MCCH	Maquita Chuchunschic Comercializando como Hermanos
UNOCACE	Unión Nacional de Organizaciones Campesinas Cacaoteras del Ecuador
CCN 51	Colección Castro Naranjal – 51
Kg	Kilogram

1 Introduction

Cocoa is the world's third most important agricultural export commodity and it is produced mainly by small farmers in over 50 countries. The world cocoa market distinguishes between two broad categories of cocoa beans: "fine or flavor"¹ cocoa beans, and "bulk" or "ordinary"² cocoa beans. Less than 30% total world's cocoa producer countries produce 80% of world's fine cocoa therefore they depend more in specialized market than in volume driven markets (ICCO, 2007:5).

Fine cocoa receives an extra price over the bulk cocoa known as "Premium Price" which is supported through price premiums paid to gourmet chocolate markets (FLORES, 2007). However the current marketing structure of the value chain and the global market behaviour based on volume over quality is discouraging exporters, intermediaries and farmers to differentiate their beans according to variety and/or quality and invest in quality improvements (PANLIBUTON, 2004), which may result in serious consequences specially for small scale producers, since chocolate manufacturers may stop buying it (ICCO, 2007).

Jan Vingerhoests (former director of the ICCO) argues that cocoa is a business mainly based on trust: *"you need to sell what you offer, and if a contract is celebrated for the delivery of a 100% fine cocoa shipment, then it is necessary to comply with it"*. Quality manipulation practices such as the mixture between fine and bulk cocoa or poor quality beans due to inadequate post harvest processes cause a drop in the fine cocoa prices and lowers the trust between contractors (FLORES, 2007). Countries like the United States, Belgium, Switzerland and Germany have expressed their dissatisfaction in regards to quality manipulation practices.

This is particularly the case of Ecuador, which produces 60% of the world's fine cocoa and where more than 100.000 small holders' families depend economically on this crop. However, buyers are losing confidence in Ecuadorian cocoa due to this quality/variety manipulation (FLORES, 2007). Consequently, due to complaints received by the ICCO from importer countries, in 2004 the ICCO reduced fine Ecuadorian cocoa recognition from 100% to 75% as punishment, and currently the ICCO forewarned

¹ The fine or flavor cocoa in Ecuador is also known as National variety, however to avoid any confusion along the document, this type of cocoa will be simply named as "fine".

² There are several cocoa varieties considered "Bulk" or "Ordinary" cocoa, therefore, in order to avoid confusion along the text, this type of cocoa will be named simply as "Bulk".

Ecuador that if varieties mixtures prevail, a new reduction from 75% to 50% will take place (MAGAP, 2010). This loss of trust and international recognition poses a threat both for the whole country's economy and the small farmers' livelihood.

This being said, *the overall aim of the thesis is to understand how “quality manipulation” problems along the fine cocoa supply chain affect small farmers' market opportunities and what is the role of collective marketing in overcoming such constrains.* The findings could contribute to improving reliability and market opportunities for fine cocoa smallholders and for Ecuador as producer country (*see Figure 1*).

1.1 Problem Statement

It is a common practice among small farmers and other supply chain actors to manipulate cocoa quality, mixing beans of fine with bulk varieties of cocoa to maximize their individual profit. Since there are limited monitoring technological options and the activity is developed by over 100.000 families, it is a difficult task to control and/or identify “quality manipulation” due to “mixed varieties”. However once the “Chocolate industries” or “clients” recognize the grade of impurity in the product, economic or quota sanctions/restrictions are imposed on the country as a whole (BTFP, 2005; ICCO, 2007).

In 2009, as a response to the ICCO's imposed sanctions due to “quality manipulation” practices, the Ecuadorian state signed an intern ministerial agreement of “repositioning of the fine cocoa” in order to design and apply all the needed actions to relocate it in the international market, being one of its main goals to eradicate this practice along the supply chain. However, considering that 90% of the small farmers are independent and mainly rely on a long intermediation process under “no differentiation price” schemes, the goal of reducing “quality manipulation” practices and improve smallholders' market access become more challenging, since significant institutional, technical and market regulations are needed (MAGAP, 2010).

1.2 Research questions and working hypothesis

Taking into consideration that private and social interest diverges along the fine cocoa supply chain because it is assumed that “quality manipulation” can increase limited individual revenues but at the same time affect market opportunities at a national and local level, this thesis' first research question is:

How can the “quality manipulation” socio-economic dynamics and implications be theoretically explained?

It is the author’s working hypothesis that: *“Quality manipulation” practices at the small farmers’ level are a typical Multiple-person social dilemma, which could be improved through collective marketing as a form of collective action. (See Figure 1)*

In addition, motivated by an extensive and increasing growing scientific research in the field of natural resource management involving behavioral approaches and experimental techniques to study how humans’ behavioral particularities may affect society’s value of resources and the environment, this thesis’ second research question is:

Can an experimental approach help us to understand a “quality manipulation” social dilemma and look for possible solutions involving small farmers’ collective action? It is the author’s working hypothesis that: Experimental games are a suitable methodological tool to study this social dilemma and identify possible enhancers of collective action. (See Figure 1)

1.3 Specific objective and expected outcomes

In order to answer the thesis’ first research question, a specific objective has been defined: (i) *to find out if the theory of collective action and social dilemmas can partially explain “quality manipulation” practices in the supply chain and its implications.*

The proposed methodology to reach this objective has been defined and followed in three steps: (i) to develop a conceptual framework based on secondary data and official documentation, (ii) to review the relevant literature in social dilemmas and social collective action, that can be linked to “quality manipulation” and “collective marketing”, and finally, in order to understand better the socio-economic dynamics and implications of the “quality manipulation practices within the fine cocoa supply chain, (iii) to gather primary information through open-ended interviews to key actors. The expected outcome of this first stage is an analysis between the primary and secondary data describing the problematic and its relation with the social dilemmas and collective action theories (Figure 1).

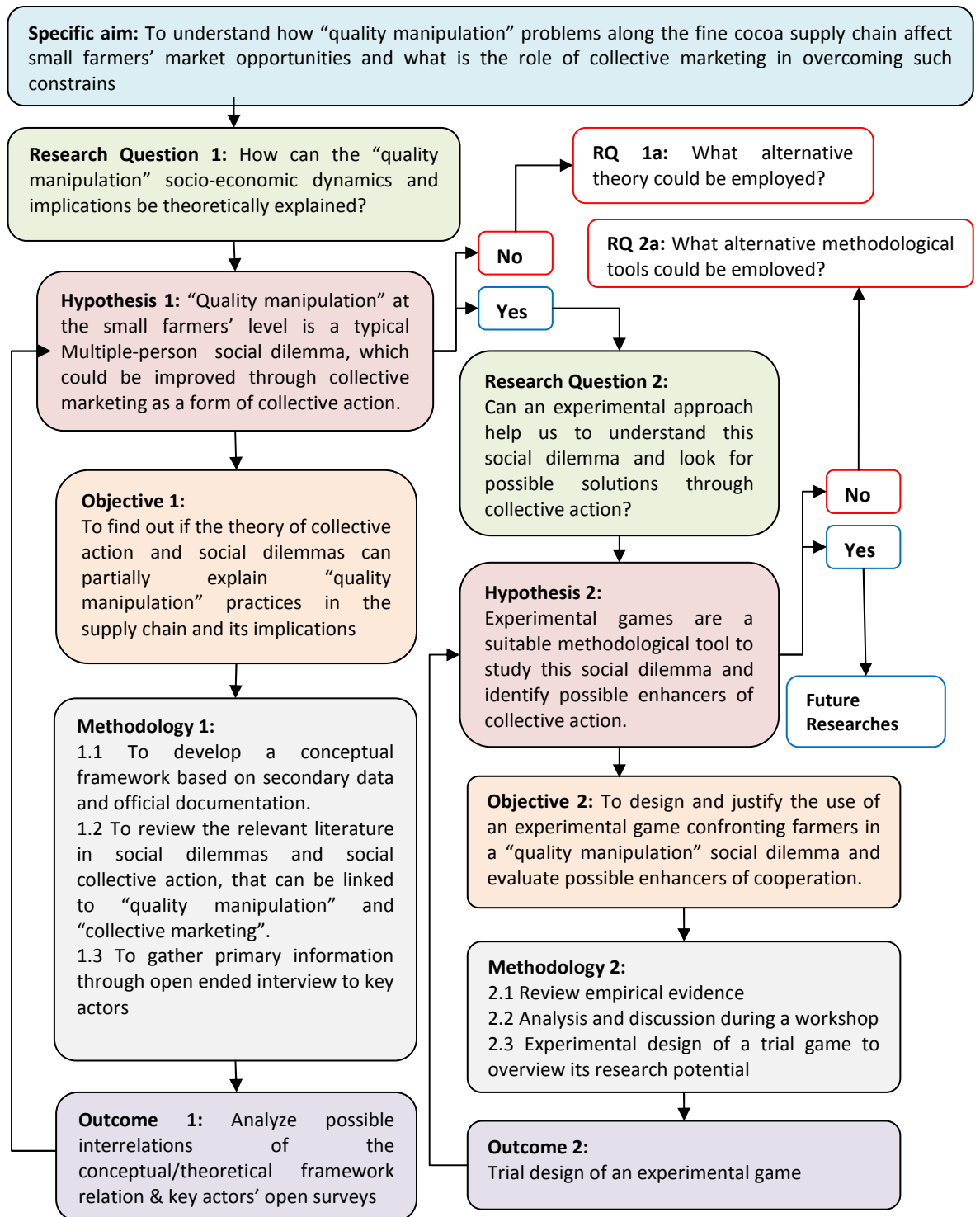


Figure 1 Thesis structure

Once the first hypothesis is accepted, the second research question will be tackled, for which a second specific objective has been defined: *to design and justify the use of an experimental game confronting farmers in a “quality manipulation” social dilemma and evaluate possible enhancers of cooperation.*

The proposed methodology to reach this objective includes: (i) review of economic experiments in order to identify those that can serve as basis for the design of a framed one, (ii) Open discussion of the topic during the workshop “Experiments in the land and field on governance of Social-Ecological Systems” facilitated by Assoc. Prof. Marcos Janssen, Arizona State University (ASU) and (iii) experimental design of a trial game which provides us an overview of the research potential that experimental games might have in this field of research. The expected outcome of this second stage is a trial design of a framed game and a short protocol for its further development in the future (Figure 1).

1.4 Contribution and originality

A better understanding about how social dilemmas affect small farmers’ decision making in quality manipulation, might contribute to formulate and apply more successful strategies at local and national level to re build trustful international market relations and therefore improving fine cocoa small farmers’ situation. The outcome of this thesis will provide some theoretical and methodological insights which may contribute in future researches in the topic. In addition, the applicability of the outcomes is not restricted to the case of cocoa and Ecuador, since quality assurance problems among small farmers is widely recognized in developing countries.

In terms of originality, there is limited literature from the theoretical and methodological point of view addressing social dilemmas problems at the smallholders’ level within the supply chain. In the same way, the use of experiments as a methodological tool in this field is very scarce. The outcomes of this thesis are following few first steps few first steps in the applications of some learned lesson on economic experiments already explored in other research areas.

1.5 Thesis structure

The content is structured as follow: In the first chapter “Introduction”, the research problem, objectives and research questions are described. The second chapter “Conceptual Framework”, consists in a description of the case which includes a (i) general introduction, (ii) brief background information and description of the cocoa supply chain, (iii) the main actors and their interaction with the proposed problem related to cocoa quality manipulation and its implications for smallholders’ market access, (iv) local, regional and national strategies to improve the current situation.

The third chapter “Theoretical Framework”, theories which explain the social phenomena related to the stated problem and support possible solutions with scientific evidence are reviewed and theoretical propositions by various authors/disciplines are examined. Topic such as (i) collective action, (ii) collective marketing, (iii) social dilemmas and (iv) group identity and group cohesion are included.

The fourth chapter “Research methods” explores and justify the chosen research strategy and data collection and analysis methods. In addition, the limitations and possible problems in the methodology implementation is acknowledge from the theoretical and logistical perspective. In the fifth chapter “Results and Discussion”, the two resulting outcomes are illustrated and the trial experiment designed is briefly discusses. This is followed for a further detail of the experimental design and protocol of the trial experimental game in the sixth chapter. Finally, the seventh chapter “Conclusion and Recommendations” addresses general conclusions, recommendations and potential future fields of research.

2 Conceptual Framework

2.1 Introduction

Many of the world's poor belong to agriculturally based rural households. Most of them are linked to a wide range of markets from local to international scales and their economic opportunities depend mainly on agricultural production, natural resources management and related rural enterprises (DONALD, 2004). The production of agricultural export commodities represents a major source of foreign income for many developing countries. However, to reduce global poverty it is necessary to focus on smallholder agriculture and increase their ability to participate successfully in the market (SHEPHERD, 2007).

Although cocoa just like coffee plays a very important economic role for small farmers, it has received less academic attention than coffee (FAO, 2008). Cocoa is produced in over 50 countries in Africa, Latin America, the Caribbean and Asia. It is the third World's most important agricultural export commodity, after coffee and sugar. It is one of the major sources of foreign income for the few countries that dominate its production where roughly 6 millions of smallholders produce over 70% of the world's cocoa in areas less than 10 ha (DONALD, 2004). Additionally, it has been estimated that the livelihoods of 14 million rural workers depend directly on cocoa picking in big plantations and cocoa processing factories (OXFAM, 2002).

As a cash crop, cocoa can provide necessary income for food purchasing, being of special importance to regions facing food security problems (FRANZEN, 2007). Smallholders usually sell the cocoa beans through intermediaries or cooperatives to exporters who are converters themselves or to local companies controlled by the converters (FAO, 2008). However, due to a lack of competition along the cocoa supply chain, farmers capture only an approximate of 0.5% of the retail price for cocoa. Poorly – designed cocoa market liberalization reforms have contributed to decreased small farmers' access to credit, inputs and markets. As result, cocoa yields and quality has decreased, reducing even further smallholders' competitiveness and income (OXFAM, 2002).

2.2 Cocoa varieties and world markets

Cocoa beans and its four intermediate products (liquor, butter, cake and powder) are the raw materials for several products, being the European and United States chocolate

markets their largest consumers in terms of beans' equivalent (ICCO, 2007). The world cocoa market distinguishes between two broad categories of cocoa beans: "fine" cocoa beans, and "bulk" or "ordinary" cocoa beans. While in one hand African producer countries supply over the 70% total world's cocoa (TOLLENS, 2003), in the other hand The Latin American and Caribbean region supplies about 80% of the world's fine cocoa (ICCO, 2007). Ecuador is the world largest producer of fine cocoa, covering 60% of the demand (MAGAP, 2010; PANLIBUTON, 2004) (See Figure 2). The Benelux, France, Germany, Italy, Switzerland and the United Kingdom are the largest consumer market for fine cocoa, followed by the United States and Japan as notable users of this type of cocoa (ICCO, 2007).

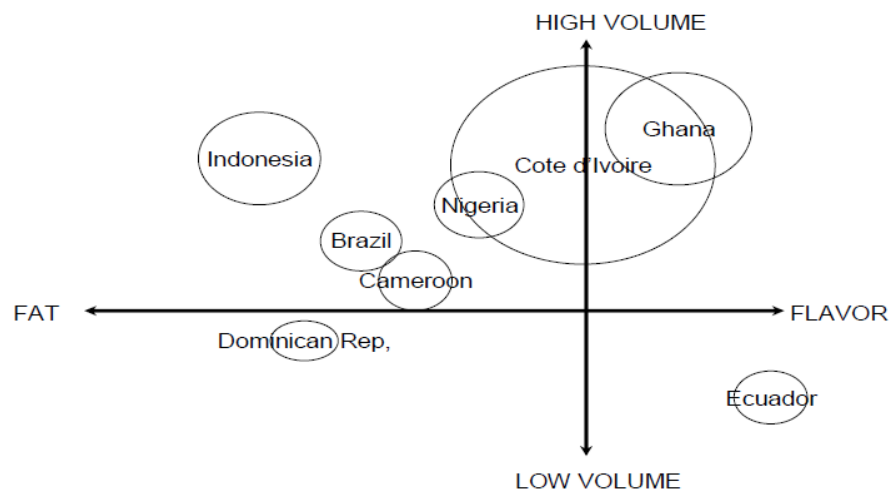


Figure 2 Cocoa's world production: Quality and volume.

Source: PANLIBUTON, 2004

The current marketing structure of the value chain and the global demand for low quality/low price cocoa have been some of the reasons for a rapid decline of fine cocoa in the total world production, which has fallen from about 50% at the beginning of this century to just under 5% (OHENE, 2008). Fine cocoa market, is relatively small, separate and highly specialized in comparison to the international market for bulk cocoa. Specialist trader agents look for specific quality and flavor characteristics within the fine cocoa varieties to sell it to specific chocolate companies. Nowadays, chocolate manufacturers use it in traditional recipes, mainly for a limited number of expensive, up-market finished products and only very recently the demand for fine cocoa has started to grow very rapidly creating a supply deficit (ICCO, 2007).

International Cocoa beans' price is characterized by its constant variations along the year and it is determined in the London and/or New York Stock markets. The Fine cocoa fetches a higher price than regular cocoa. The extra price is known as "Premium Price" which is supported through price premiums paid for gourmet chocolate and cocoa in the consumer goods market (DONOVAN, 2006). The premium price for fine cocoa can vary between US\$ 80 to 310 per Ton over the London or New York terminal price and in exceptional circumstances the premium could be above US\$ 800 per ton over the regular cocoa price (FLORES, 2007). However, the premium price is affected by this denomination (FLORES, 2007). For example, a particular cocoa from a specific country might trade at a negotiated premium or discount price. In other words, physical cocoa contracts incorporate the different national characteristics of the cacao bean quality to calculate premiums and discounts based on the country of origin (JANO 2007:8).

The International Cocoa Organization, through The International Cocoa Agreement, 1994, recognized 17 countries as exclusive producers or partly producers of fine cocoa. Eight countries are classified as exclusive producers: Dominica, Grenada, Jamaica, Saint Lucia, Saint Vincent and the Grenadines, Samoa, Suriname, and Trinidad & Tobago and the other nine countries are classified partly producers. The latter includes Ecuador (75%), Venezuela (50%), Costa Rica (25%) and Colombia (25%) from the Latin American and Caribbean region (ICCO, 2007:5). The Latin American and Caribbean region supplies about 80% of the world's fine cocoa, followed by Asia and Oceania (18%) and Africa (2%).

The current cocoa market behaviour is driving transactions based on volume and discouraging exporters, intermediaries, or farmers to differentiate their beans according to variety and/or quality and invest in quality improvements (PANLIBUTON, 2004). Since producers of fine cocoa depend more on high quality market opportunities than volume driven markets, an increasing supply deficit as well as losses in reliability on economic transactions.(ICCO, 2007). Therefore, an important strategy to prevent market opportunities losses is to ensure that fine cocoa quality is not distorted, either by mixing with bulk cocoa or by inadequate post-harvest processes (FLORES, 2007).

2.3 "Fine" Cocoa in Ecuador

Cacao was the mainstay of the economy in colonial times. The Spanish found the Indians cultivating cacao when they arrived in the sixteenth century, and it first became

an export crop in 1740. In 1830, the foundation of Ecuador was declared. Many wealthy families dedicated their land to the cultivation of cocoa. The production of this crop in Ecuador increased between 1980 and 1920 from 15,000 to 40,000 MT / year becoming the largest exporter in the world thus leading to the establishment of the first banks in the country (ANECACAO, 2006).

Most cacao production took place on small farms, frequently only to provide supplemental income to the farmer. Most small producers preferred traditional cultivation techniques and did not harvest the beans in years when the price was low. In contrast, the few large plantation owners systematically replaced older trees with newer disease-resistant varieties and used fertilizer to increase yields. Most cacao farmers grew an aromatic variety used for flavoring. In 1987, 311,000 hectares were planted with cacao, producing 57,000 tons of cocoa beans (MAGAP, 2010).

In the late 1920's the emergence and spread of diseases such as Witch's Broom and Monilla, added to the low prices in the international market consequences of the First World War, reduced its production by 30%. As a consequence, cocoa crops and the Ecuadorian economy entered a period of recession and many plantations were broken up and diversified into rice, sugar, corn, and banana. After World War II, increased prices and new disease-resistant strains revitalized the industry (MAGAP, 2010).

The cultivation of cocoa has been a determining factor for the formation of villages and their identity both in the coastal region and in the Ecuadorian Amazon, because it involves more than 100,000 farmers and an estimated area of 455,340 hectares of crops. Ninety percent of fine cocoa producers are independent (over 80.000), which grow mostly small scale and are directly related to the middlemen in the villages located near the production area (ANECACAO, 2006).

Ecuador produces mainly two types of cocoa, CCN-51 and National cocoa. CCN51 cocoa variety is a hybrid characterized by its reddish colored fruit, which contains large amounts of fat. Its production capacity is four times higher than the national one and has greater resistance to diseases and it is mainly produced in medium and large scale plantations. However, according to Jano's (2007) survey study, farmers cultivating CCN-51 spent on average 77% more on pesticide applications and labor than farmers cultivating only National variety (JANO, 2007). Local processors and

chocolate manufacturing industries prefer CCN51 because of its high butter fat content (COLLINSON, 2000).

The native Ecuadorian variety is the only forester cocoa which meets all the organoleptic properties to be considered fine. This is mainly produced by small farmers under agro forestry systems and supported by family work. It is characterized by its fruity and flowery flavor and highly regarded in the confectionery industry. Although the susceptibility to disease is a limiting factor for high yields, the international price offered for the metric ton of dry, fermented beans with a high degree of purity, may exceed the CCN51 by 20% and 40% (ANECACAO, 2006).

At the national level, the cocoa beans are classified according to a set of quality parameters as shown in Table 1, which is recognized by the international market and it is open to price negotiation (BTFP, 2005).

Table 1 Requirements for fine cocoa in Ecuador

Denomination	Requirements
ASE - Top High Season (Arriba Superior Época)	51% minimum fermented, 25% maximum violet, 18% slate maximum, 6% maximum defective
ASN - Higher Up Christmas (Arriba Superior Navidad)	52% fermented, 25% violet, 18% slate, 5% defective
ASS - Higher Select Top (Arriba Superior Selecto)	65% fermented, 20% violet, 12% slate, 3% defective
ASSS - Select Top Summer Top (Arriba Superior Summer Selecto)	75% fermented, 15% violet, 9% slate, 0% defective
ASSPs - Superior Summer Planting Up Selecta (Arriba Superior Sumer Plantación Selecta)	85% fermented, 10% violet, slate 5%, 0% defective

Source: INEN NTE 176

Even though fine cocoa (National variety) lost ground when the hybrid CCN-51 was introduced in 1930, it is still considered as the cocoa variety with highest market importance and traditional distinction. For example, during January 2012, while CCN-51 reached 5.652 MT which represent 30% of the total exports of national cocoa beans, fine cocoa exports reached 13.322 MT. In Figure 3, the green bar to the left represents the total exports of National cocoa and the blue bar represents the CCN-51 exports. The following green bars represent the exports of National cocoa according to its quality classification (ANECACAO, 2006).

The main markets for Ecuadorian cocoa are Europe and the United States, with 40% and 35% of demand, respectively. Twenty five percent is distributed among the local market and other countries. According to the International Cocoa Organization ICCO, Ecuador produces 65% of the total of fine cocoa in the world range from the National variety (ANECACAO, 2006).

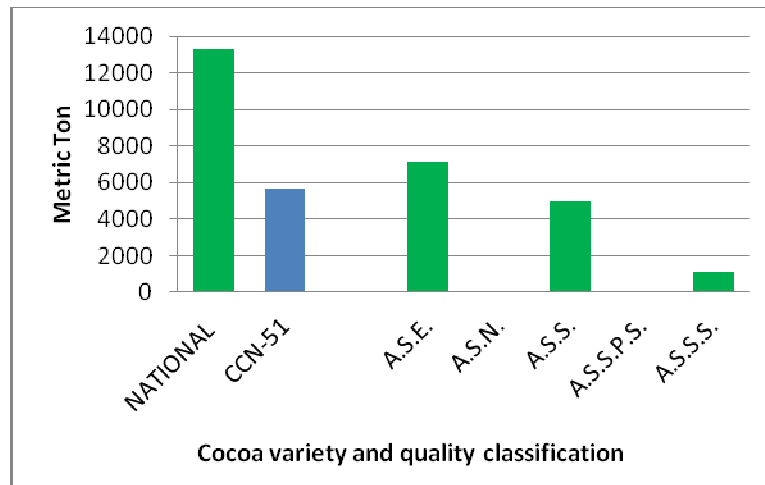


Figure 3 Cocoa exports in January 2012: National and CCN-51 cocoa. Source: ANECACAO, 2012

“Fine” cocoa shows great demand in the international gourmet chocolate markets, the world's finest chocolates are made from Ecuadorian cocoa, making it very appropriate to support the production of this crop and thus benefit a large number of farmers settled in the country. On July 2, 2005, the Ecuadorian government declared cocoa as a symbolic product of the country since it has been of great socioeconomic importance for nearly a century (MAGAP, 2010).

2.3.1 Traditional and specialized fine cocoa supply chain

In the cocoa supply chains in Ecuador for “fine” as well as “Bulk” cocoa varieties, two different marketing channels can be generalized (**Figure 4**). The “Traditional chain” where producer’s cocoa goes through several intermediation steps and the “Specialized Chain” where the producer has a more direct relation with Clients through Producer’s organizations (JANO & MAINVILLE, 2007).

According to the Ministry of Agriculture, in the “Traditional Chain” there exists lack of differentiation in price in regard to Fine or Bulk varieties at the local level, the price is variable and mostly depends on the bargaining between the farmer and the intermediaries. Price differentiation is more likely in the “specialized chain” which

mainly benefits producer organizations (MAGAP, 2010). Since only 10% of cocoa small farmers belong to producers organizations, 90% of small farmers supply their cocoa through the “Traditional chain”. Fine cocoa farmer organizations are constituted mainly in first and second grade associations and it is estimated that 20.000 farmers belong to them (BTFFP, 2005).

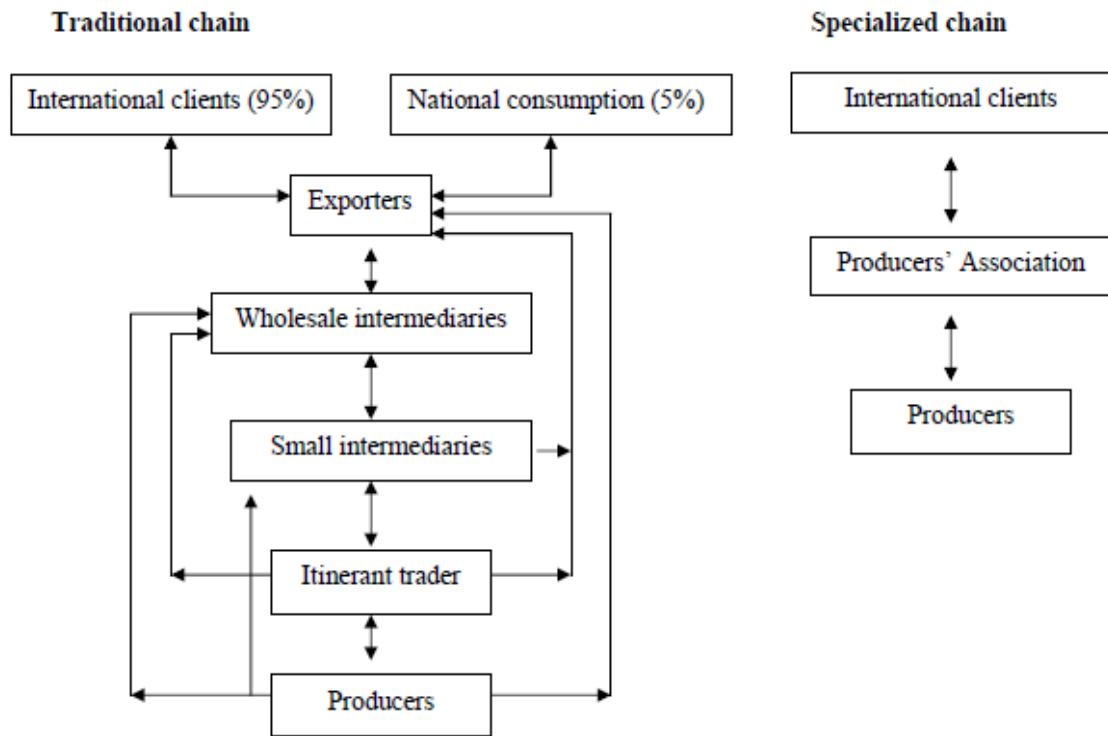


Figure 4 Traditional and specialized cocoa supply chain. Source: Source: Adapted from Jano & Mainville (2007)

Since 90% of the fine cocoa remains un-organized, intermediaries play an important role in the traditional supply chain. There are approximately 1000 intermediaries nationwide that purchase the product in beans. It is estimated that 10% of production is channeled through intermediary truckers, 22% by the trader based in the nearest town, 54% through the head trader based by Canton, and 14% is sold directly by the exporter (MAGAP, 2010).

Currently there are 29 exporters of cocoa beans, which are the main gatherers. The fine cocoa aroma is mainly located in the provinces of Bolivar, Cotopaxi, El Oro, Esmeraldas, Guayas, Los Ríos, Manabí, Napo, Zamora Chinchipe, Sucumbíos and Orellana (MAGAP, 2010).

2.3.2 Cocoa quality manipulation practices: National Implications

Ecuador exports of National fine cocoa have been historically benefited by the earnings from premium prices on the New York Stock Exchange (NYSE). However, as the number of CCN-51 plantations increase, the quality of National cocoa being exported has declined due to the mixing of beans of different varieties and quality levels. This quality manipulation practices resulted in significant reduction in the perceived quality of Ecuador's cocoa exports, resulting in the decision taken in 2005 by the International Cocoa Organization's (ICCO) 2005 to reduce Ecuador's export of fine cocoa rating from 100% to 75%. This sanction was accompanied by a warning to reduce the rating to 50% if the quality is not improved (JANO, 2007; ICCO, 2005).

CROUZILLAT ET AL (2000) argue that this international sanction can be considered a cause as well as an effect of a decline in the status of Ecuador's cocoa sector. On the one hand, it is the effect of the decrement in the quality of the product and on the other hand it is the cause as the drop in prices perceived by exporters, intermediaries and farmers. At the importer level, the lack of information on whether a certain batch of cocoa qualifies as fine creates problems.

According to ICCO (2005), importer companies have reported to not have problems when buying directly from plantation or large farms, because they know exactly what they are buying and how the cocoa's post-harvest process has been done. However, the confidence in the product decreases when the cocoa has been collected from a large number of farmers by small intermediaries or agents of traders, since once it is collected, cocoa from different places, post-harvest treatments and varieties is mixed. At that stage, it is very difficult to assess the purity and quality of fine cocoa, since visual inspections, cut test, smell or a simple organoleptic test might not be sufficient.

In addition, national exporters and international clients complain about the risk of paying a high price for a quality that might be disappointing. This situation harms the trust-market networks formations and price opportunities especially for small farmers, since the long supply chain lacks reliability and clients prefer to maintain market relations with larger farmers or farmer organizations. ICCO's report (2007) asserts that the fine characteristics of the National or native cocoa bean is not being questioned, but it is the apparent practice of mixing different qualities of beans that

leads to the rejection of cocoa shipments, consequently declining the reputation of, and the premiums for, cocoa originating from Ecuador (ICCO, 2007).

2.3.3 Cocoa quality manipulation practices: Small farmers constrains and opportunities

According to JANO AND MAINVILLE (2006), there are available opportunities for small farmers to access better market prices through the production of high quality cacao, which receives premium prices on the world market. However, Ecuador's failure to reach its potential is diminished and attributed to the limited knowledge, awareness and capability to invest in pre and post harvesting management at small farmers' level. Due to these factors, it is widely known that inadequate and highly variable post-harvest management practices are the norm.

Even though, there are failures in the fine cocoa supply chain, some institutional innovations such as small farmer organizations are exceptions to the generalized market performance. Producer organizations are involved in activities such as collection, post-harvest process and marketing of the product. International clients have shown a high willingness to negotiate more directly with small farmers commercial organizations, especially because these groups are considered reliable due to their product post-harvest management criteria of "no quality and variety manipulation or mixture" (BTFP, 2005).

In order to reach export volumes, producers' organizations also buy product from independent farmers. For example, MCCH purchases from organization members as well as conventional traders in order to achieve economies of export scale, however MCCH community agents (assembles) purchase on preferential terms (differentiate price) only from small producers who belong to affiliated producers associations (COLLINSON, 2000). In order to provide an example of how the supply chain works in some producers organization. Figure 5 shows the traditional and specialized supply chain from MCCH. Although MCCH performs the same roles in both chains, some operations are internalized in the preferential or specialized chain.

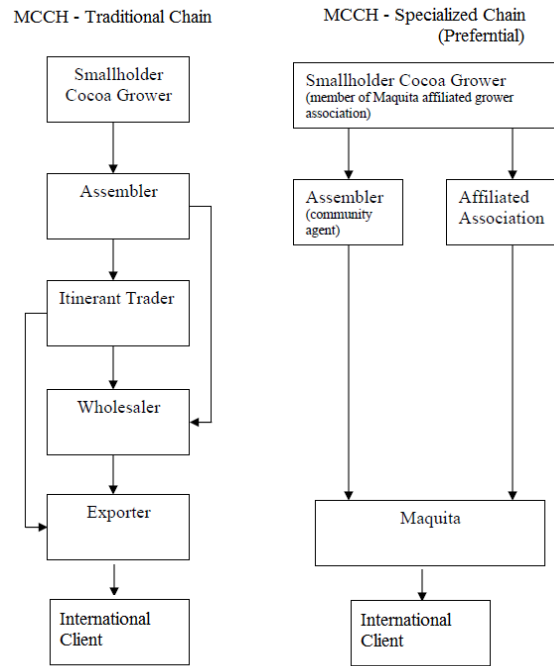


Figure 5 Traditional and Specialized chain in MCCH.

Source: Based on Collinson (2000) and Jano & Mainville (2007).

Fine cocoa farmer organizations are considered successful examples regarding quality monitoring, which have designed and adapted quality assurance methods based on local traditions and knowledge, available technology and social/organizational capital. For example, Fortaleza del Valle which is a second level farmer association and agglomerates 417 members has reached high quality standards through a policy of only buying fresh cocoa to the producers, in order to get a more homogeneous product after fermentation and drying process. Since 2006, they started to export organic certified product to Switzerland (JANO AND MAINVILLE, 2006).

FEDECADE, which is a second level farmer association agglomerates 10 associations that sum a total of 556 active members who have been able to achieve different organic certifications and export collectively since 200 to Germany, the United States and Italy. UNOCACE, is also a second level farmer association, which grouped 12 associations which sum a total of 745 farmers who export collectively to France since 2002 (JANO AND MAINVILLE, 2006). In spite of the significant organizational goals reached by some producer organization, the associability in farmers remains low, 90% of the farmers are non-organized (MAGAP, 2010).

2.3.4 National strategies to repositioning Fine cocoa

According to the principles defined in the Constitution and Strategies of National Development Plan, the "Repositioning of the National Fine Cocoa" is fully aligned with the themes of partnership, food security and sustainable development that are part of these principles. To achieve this objective, the MAGAP, AGROCALIDAD, research centers, fine cocoa farmer organizations and other key actors and agents, have made strategic alliances. On July 1, 2009, the Foreign Ministry of Ecuador acquired formally the following commitments at a national level (MAGAP, 2010):

- i. The MAGAP will design and implement the Fine Cocoa Sustainability Plan which aims to improve the chain of fine cocoa, in coordination with INIAP AGROCALIDAD, MRECI and National Associations of Fine Cocoa.
- ii. Strengthen AGROCALIDAD, in order to enable it to issue the corresponding certificates of quality, related to certification of purity of the National fine Cocoa.
- iii. Government Support to the propagation of new varieties developed by INIAP (TSE 575, TSE 576, TSE 544, TSE 558), they have demonstrated great productive potential, scientifically proven by the Technical Body. In addition, strengthen financially INIAP to support these new varieties and propagate them in adequate and certificated nurseries nationwide, and monitor and certify nurseries and crops dedicated to national fine cocoa.
- iv. Current and potential producers' awareness of the benefits and advantages of sowing National fine cocoa and of the new varieties developed by INIAP, emphasizing the primary importance of the eradication of variety/quality manipulation or mixture between fine cocoa varieties and other bulk varieties through all the process along the supply chain.
- v. Improve the National Fine Cocoa Value Chain. Essentially promote the strengthening of the associability or partnership, with direct involvement of national institutions, including the Ministry of Economic and Social Council, the CFN and the National Development Bank, as sources of

credit; in order to facilitate productive partnerships that tend to development more direct marketing channels (e.g. Fair Trade).

- vi. Careful analysis of the concept of "New Products" in order to avoid blurring the national target plant, which is the sustainability of the National Fine Cocoa.
- vii. Create an exclusive tariff item for National Fine Cocoa beans, in order to obtain and display accurate statistics on the percentage of Ecuador's exports of this type of Cacao. This strategy would aim to eradicate product manipulations and foster a clear differentiation of cocoa for their differentiation.

2.4 Summary

Cocoa is the third most exported commodity in developing countries and its production is dominated mainly by smallholders. The world market distinguishes between two broad categories of cocoa beans: "fine" and "bulk" cocoa. The Latin American and Caribbean region supply about 80% of the world's fine cocoa, from which Ecuador is the world largest supplier of fine cocoa with over 60% of its production. Fine cocoa specialized markets and premium prices are being threatened by its decrement in quality and purity.

According to ICCO, several international clients reported dissatisfaction with the grade of quality and purity of the fine Ecuadorian cocoa product, due to mixtures between different varieties. As a result Ecuador was sanctioned with a lower recognition as fine cocoa producer (from 100% to 75%), which directly affected its revenues due to lower premium prices in the international market. Due to the low reliability, national exporters and international importers prefer to deal directly with large farmers or farmers' organizations.

In Ecuador, two marketing supply chains can be generalized for fine cocoa and bulk cocoa: (i) the traditional characterized by its long intermediary steps, low or null recognition of premium prices which serve mainly to independent small producers and (ii) the specialized chain which is characterized by its short marketing steps, high recognition of premium prices and serve mainly farmers' organizations. The associability among fine cocoa producers is very low, that only 10% of them belong to a farmers' organizations.

In order to improve the fine cocoa recognition and reputation at the international level, overcome the national limitation to improve quality and quantity and improve market opportunities to non organized farmers, the Ecuadorian state in 2010 signed a commitment to design and implement several strategies, among them: (i) the national sustainability plan for fine cocoa, (ii) research and propagation of new varieties, (iii) certification systems of purity and quality along the supply chain, (iii) creation of an exclusive tariff item for fine cocoa in order to decrease product manipulation and collect reliable statistical data, (iv) key actors awareness about quality and purity, (v) promote associability, among others. The projects are in the stage of designing and there is still limited public information about the current stage of each of them.

3 Theoretical Framework

3.1 Smallholders and market access

In the last years, the importance of the smallholder in agriculture in developing countries has gained great academic attention, which has led to two main crosscurrents. First, smallholder farmers' engagement is needed to reach agricultural development since they are the majority of actors and second, the major obstacle facing smallholder led agricultural growth is lack of market access, which will lead to increased income and food security, more rural employment, and sustained agricultural growth (BARHAM, 2009).

LUNDY (2002) argues that in order to overcome this two main constraints, it is necessary to create an entrepreneurial culture in rural communities, which means to shift the focus from production programs to market-oriented interventions. In the last years, institutions of collective action are proposed as an efficient mechanism for enhancing marketing performance (KARIUKI AND PLACE, 2005). MEGYESI (2010) asserts that *“the natural conditions, markets, social structures, institutional and political frameworks, together with the available capital assets to respond to these external framework conditions, constitute limiting and enabling factors for the development of collective farmers marketing initiatives and define their choice of strategies”*.

Economic farmers' organizations; mainly, membership organizations are engaged in bulking and collective marketing. The cooperative is the most common legal form of farmers' organization, however in developing countries several formal and informal different organizational formats are commonly used as instruments for the empowerment of small scale farmers in markets (TON, 2008).

Different studies (KRISHNA, 2001) emphasize how structural forms of social capital (roles, rules, procedures and social networks) lead to mutually beneficial collective action and how cognitive forms of social capital (norms, values, attitudes and trust) are conducive for mutually beneficial collective action. Collective action has been mainly and extensively studied in the field of natural resource management (OSTROM, 2007), showing how human and social capital formation have been critical in solving many communities' development problems in this field (KRISHNA, 2001).

Collective action theory and social capital literature have been reviewed in parallel; however collective action and its relation to social capital has received much

less attention in the field of marketing. While there is significant evidence of the importance of social capital in natural capital conservation, only few studies examine how it is utilized for collective action to improve marketing performance (BARHAM, 2009).

There is increasing evidence that acting collectively through farmer organizations and smallholders may provide greater opportunities to participate effectively in the market, reducing transaction costs, obtaining market information, tapping high value markets, improving their bargaining power with buyers and intermediaries and allowing them to compete with larger farmers (MARKELOVA, 2010). There are several cases in Latin America, Africa and Asia that demonstrate that many buyers prefer to deal more formally with producer organizations since they can offer a more homogeneous and stable supply of quality products (BEBBINGTON, 1996 ; NARROD, 2009 ; KAGANZI, 2009).

For example, the cocoa producers' federation in Bolivia improved its domestic market opportunities and reached international high quality markets (BEBBINGTON, 1996). Grape producer groups in India reached high-value markets by obtaining the required food safety certifications, which individually would be inaccessible (NARROD, 2009). One farmers' group in south-western Uganda successfully sustains sales of potatoes to a fast-food outlet in Kampala achieving strict quality parameters (KAGANZI, 2009). Therefore, collective action success was accompanied with strong leadership, iterative market-led learning process, monitoring and regulation and networks of trust relations (MARKELOVA, 2010).

3.2 Collective marketing as a form of small farmers' collective action

Studies about collective action in natural resource management highlight the voluntary action of a group to pursue a shared objective as the main advantage (RASMUSSEN AND MEINZEN-DICK, 1995). Based on several authors, AGRAWAL (2001) identifies 8 common conditions for successful collective action outcomes in natural resource management: (i) small group size; (ii) clearly defined boundaries; (iii) shared norms; (iv) past successful experiences; (v) appropriate leadership; (vi) interdependence among group members; (vii) heterogeneity of endowments, homogeneity of identities and interests; and (viii) low levels of poverty.

Even though smallholders face different challenges in natural resources management and collective market access, key lessons can be learned from the natural resource research field. It is important to recognize that success in collective marketing depends on different factors, MARKELOVA (2010) adapts from the natural resources management literature, three broad categories of factor: (i) type of product, (ii) type of markets, (iii) characteristics of the user groups and institutional arrangement, plus the external environment.

Cooperative behavior in collective marketing is a key component in one of the broad factors previously mentioned “characteristics of the user groups and institutional arrangement” and elementary for the success of economic endeavors (BANDIERA, 2005). While the challenges of collective actions in the natural resources management is for instance to use sustainable public goods such as forest, grass or irrigation water, in smallholders’ market access, the challenge is to overcome high transaction costs in almost all non labour transactions especially in quality conscious and niche markets such as organic or fair trade (SHIFERAW, 2011).

TON (2011) enumerates some areas that might create disintegrative tendencies in collective marketing: (i) Regulating member supply, (ii) quality assurance system, (iii) coping with working capital constraints, (iv) anticipating side-selling, (v) ways to dispose of profits, (vi) differentiating services to members and non-members, (vii) decision making on activities that benefit only a sub-group, (viii) task delegation and supervision of professional staff, (ix) disclosure of market information, (x) liability in contracts and loans and (xi) managing political aspirations.

Several of these determinants of success and disintegrative areas are highly influenced by social dilemmas, and more specifically multiple-person dilemmas in the case of smallholders’ market access through farmers’ organizations and/or collective marketing. Even though collective action in real-world situation is challenging, people have managed it through different kinds of mechanisms (BACHMANN, 2003). For example, for the survival and growth of collective marketing arrangements, economic farmer organizations at some scale need to develop procedures and incentive structures related to pricing, payments, and quantity or quality requirements that work for members, the group and their value chain partners (TON, 2010).

Reaching high quality standards within collective marketing initiatives is probably one of the most challenging areas due to technological and organizational

limitations. Quality assurance as a social dilemma situation can be modeled according to the theoretical description of multiple-person public goods dilemmas or a common dilemma, where the joint good is a common market. In order to follow the main focus of this thesis and understand better the challenges faced by farmers toward quality assurance due to social dilemmas, this literature review explores further this specific area. For a short description of the other disintegrative areas in collective marketing, please see Annex 1.

3.2.1 Assuring quality through farmers' collective action

A rapid change in the organization of marketing channels in the developing world and an increasing demand of formal quality standards from the markets represent new threats for small scale farmers in developing countries, mainly because of the lack of an enabling environment such as institutional and infrastructure facilities (BIÉNABE, 2005). In terms of quality assurance, small producers face a huge disadvantage due to the lack of skilled people and technological limitations for good-quality management at the local level (BREDAHL ET AL., 2001). In Addition, the usual lack of formal contractual arrangements might discourage them to invest in order to meet these requirements (BIÉNABE, 2005).

Collective action is not an easy task and collective marketing is not an exception, since in order to become an instrument of development, farmers' organizations need to overcome several internal and external organizational challenges through the development of working rules, incentives and trust-enhancing mechanisms that can be considered as organizational social capital (TON, 2011; LEANA, 1999). In addition, even though smallholders may seek to access better markets through farmers' organization and/or collective marketing in order to increase their income, collective interests do not necessarily produce collective action (HECKATHORN, 1996). OLSON (1965), states that self-interested behavior precludes cooperation when group rationality is in contradiction with individual rationality and where self-interested behavior is influenced by social dilemmas.

In spite of the common problems hindering collective action, humans have found different forms to deal with them. There are several successful examples where collective action among farmers and other actors of the supply chain have been of great help to overcome some market barriers, such as quality assurance (DEVAUX, 2009). However, a complete and strong organizational structure is needed to enhance

relationship commitment and therefore prevent opportunistic behavior. TON (2011) illustrates the threat of opportunistic behaviour in collective marketing as follows:

“The farmer has to trust the organisation in doing a good job when negotiating prices for him, while the organisation has to prevent possible opportunism in their membership (e.g. individual members may tend to deposit lower quality and the organization needs a system to maintain minimum quality requirements). To contain the tensions that might emerge in the course of action of the group, both part of the deal need to develop a successful governance structure that gives both the member as the organisation enough trust to accept the collective marketing ‘deal’” (Figure 6).

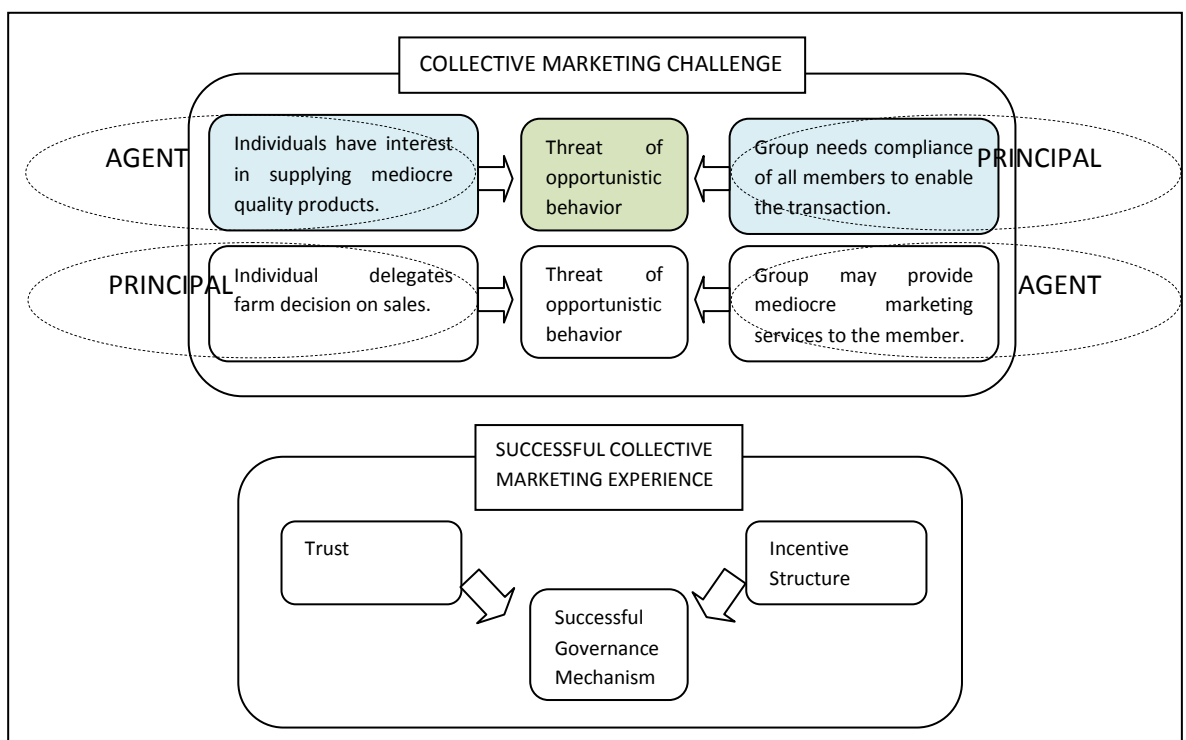


Figure 6 Threats of opportunistic behavior in collective marketing (Ton, 2011)

As Figure 6 shows, success in collective initiatives among farmers is linked to trust and incentives. MORGAN (1994:22) states that *“commitment and trust are key because they encourage marketers to (i) work at preserving relationship investments by cooperating with and within partners, (ii) resist attractive short-term alternatives in favour of the expected long-term benefits of staying with existing partners, and (iii) view potentially high-risk actions as being prudent because of the belief that their partners will not act opportunistically. Therefore, commitment and trust lead directly to cooperative behaviours that are conducive to relationship marketing success”*.

3.2.2 Evidence from Latin America

MORGAN'S (1994) and TON'S (2011) arguments can be supported through three successful examples on potato market chain innovation in the Andean region described by DEVAUX (2009). Papa Andina is an organization established in 1998 to promote pro-poor innovation in Andean potato-based food systems through collective action, among the benefited countries are Peru, Bolivia and Ecuador.

In 2002 a new high-quality brand of fresh potato "Mi papa" and a new native potato chip product "Papy Bum" were created in Peru, through the development of participatory approaches involving potato producers, wholesalers, processors, researchers and other stakeholders,. Later on, new actors got involved in the initiative, which resulted in the creation of the potato brands Tikapapa and Los Aymaras, which reached first places as high-quality brands at national and international markets. Through collective action, farmers' marketing and processing capacities were strengthened; quality norms developed, and market studies were undertaken.

Later in 2003, this participatory approach applied in Peru was adapted for its implementation in Bolivia, involving farmers, traders, exporters, cooking schools and other stakeholders as well. In the first stage and in coordination with national authorities, a "Bolivian Quality Standards for Chuño and Tunta"³ was participatively prepared. As a next step, new uses and ways to improve the image of these two products were analyzed, this resulted in a clean and selected Chuño, marketed under the brand "Chuñosa".

In Ecuador, after a failed attempted to create a national level consortium of potato market chain actor, the effort shifted direction to local stakeholder platforms to develop better collaboration with and within farmers' organizations and local institution actors. Through financial support from the Swiss Development Cooperation, "collaborative projects" were developed to link small potato farmers with specific markets enhancing knowledge sharing, social learning and capacity building. As a result, improvements in productivity and high quality product were supplied to market were observed. This process led to the establishment of The Consortium of Small Potato Producers (CONPAPA) which currently support joint marketing activities.

³ Chuño and Tunta are freeze-dried potato products traditional from Peru and Bolivia

Papa Andina's work exemplifies how collective action involving small farmers and other key actors of the supply chain can create pro-poor market chain opportunities through the strengthening of the social and organization capital, innovation and trust-enhancing mechanisms DEVAUX (2009). The collective action literature stresses its role among subjects with common interests, in managing common pool resources, gaining scale economies, reducing transaction costs and improving the bargaining power of smallholders (BIÉNABE, 2005). However, in order to reinforce cooperation within groups such as farmers' organizations, subjects must overcome classic collective action problems (OLSON, 1965).

3.3 Multiple-person social dilemmas

Social dilemmas are defined as a situation in which two or more persons receive a higher payoff for a non-cooperative choice (defection) than for a cooperative choice, but all members are better off if all cooperate than if all defect (DAWES, 1980). In other words, it is a situation in which individual rationality leads to collective irrationality (KOLLOCK, 1998).

There is an extensive literature related to social dilemmas. Based on a profound review of this literature produced since 1980, KOLLOCK (1998) describes social dilemmas in two broad categories (i) two-person dilemmas and (ii) multiple-person dilemmas. The main differences among them are: First, while in two-person dilemmas one knows with certainty how the other has behaved, in multiple-person dilemmas one's actions are not necessarily revealed to others, therefore anonymity is possible and an individual can free-ride without others noticing her or his actions (DAWES 1980, P. 51). Second, while in multiple-person dilemmas the resulting cost of one's defecting is diffused throughout the group, in two-person dilemmas this cost is completely focused on one's partner. Finally, while in Multiple-person dilemmas one's action may have little or no direct control over the others' outcome; in two-person dilemmas one's actions have significant influence and/or control over the other's partner.

Based on the mentioned theories, social dilemmas faced by smallholders can be modeled as Multiple-person dilemmas. Within Multiple-person dilemmas two broad types of multiple-person dilemmas are distinguished in terms of how the costs and benefits are arranged for each individual: (i) Public good dilemmas and (ii) Common dilemmas (CROSS & GUYER 1980).

A public good dilemma is concerning to the relationship between the levels of resources contributed toward the “production of” a public good and the level of the public good that is provided (HECKATHORN, 1996). DAWES (1980) illustrates this social dilemma: Members of groups or organizations are often confronted with conflicts between maximizing their personal interests and maximizing the collective interest. A person “A” allocates minimal time and effort while most of the other members devote all of their energy into work so that the organization’s goals are achieved, and then person “A” can enjoy the benefits of goal achievement. However, if everyone acts like person “A”, the organizational goal may not be achieved and all the members will be worse off.

A common dilemma is concerning to the “carrying capacity of” the commons in function of its replenishment rate (KOLLOCK, 1998). In order to exemplify it, HARDIN (1968) describes through a mythic story a common dilemma related to natural resources management: a group of herders have open access to a common parcel of land on which they could let their cows graze. Each herder is interested to put as many cows as possible onto the land, even if the commons is damaged as a result. The herder receives all the benefits from the additional cows, and the damage to the commons is shared by the entire group. Yet if all herders make this individually reasonable decision, the commons is destroyed and all will suffer.

Summarizing, KOLLOCK (1998) states that while in public goods dilemmas involve the “production of”, commons dilemmas involve the “use of”, a joint good from which it is difficult to exclude others. For both types of Multiple-person dilemmas, there are several reasons why excluding others might be costly and difficult, such as the physical nature of the resource, the available technology, the existing laws and traditional norms (OSTROM ET AL 1993).

3.4 Solving social dilemmas through collective action

Even though an extensive theoretical and empirical research in collective action has been developed in the last decades, the origin and dynamics of it remain unclear and disputed. There are several hypotheses about the forces leading to participation in collective action and possible solutions to solve the social dilemmas that hindered it. KOLLOCK (1998) divides these possible solutions into three broad categories based on whether the solutions assume egoistic actors and whether the structure of the situation ("the rules of the game") can be changed. These categories are described as follows:

- i. *“Motivational solutions assume actors are not completely egoistic and so give some weight to the outcomes of their partners.”* Under this category different social value orientations, communication and group identity are considered strategies to enhance cooperation.
- ii. *“Strategic solutions assume egoistic actors and no changes to the structure of the game”.* These solutions rely on the ability of the actors to shape the outcomes and hence other’s actors behavior. Under this category; grim triggers, social learning and group reciprocity in a tight relation with group identity are considered as enhancing-cooperation strategies for Multiple-person dilemmas.
- iii. *“Structural solutions relax the assumption that the rules of the game cannot be changed”.* Structural changes in the payoff structure are considered a strategy to modify or eliminate social dilemmas. This strategy is significantly influenced by group identity and reciprocity.

These different strategies have in common that they turn an apparent dilemma into a non-dilemma by manipulation (conscious or automatic) of the consequences *accruing to the individual* for cooperation or defection. Behavioral experiments have demonstrated that successful cooperation outcomes from variables such as rewards, punishments, expectations of reciprocity, moralization and lack of anonymity are dependent of the consequences for the choosing individual (DAWES, 1988). For example, one’s concern about the possibility to go to jail as result of defection will enhance a tendency to cooperate; or the social rewards received by an individual in terms of reputation (TAYLOR, 1976). However, DAWES (1988) argues that group identity has such a strong and independent variable, that it can respond in the absence of any expectation of future reciprocity, current reward, punishment, or even reputational consequences among other group members.

KOLLOCK (1998) also stresses the role of group identity in numerous enhancing-cooperation strategies, stating that *“The impact of group identity is manifold and profound, having effects across all three categories of solutions: motivational, strategic, and structural”.*

- i. Group identity as a motivational solution: KRAMER & BREWER (1984) have demonstrated that subjects are more willing to exhibit personal restraint in a commons dilemma simply as a result of being identified as

members of a common group. Even though communication is considered one of the strongest factors creating or reinforcing a sense of group identity (DAWES, 1988), group identity can have such a powerful effect that it can influence rates of cooperation even in the absence of communication (KOLLOCK, 1998).

- ii. Group identity as a “Strategic solution”: TAJFEL (1981) argues that the simple categorization of individuals into a common group can increase their altruism toward the group. However, KARP (1993) argues that the effects of group identity stem not from altruism, but from the interdependencies of group members and expectations of reciprocity among the members. Therefore, the belief in future reciprocal exchanges between members moderates the temptation to defect and encourages them to cooperate.
- iii. Group identity as a “Structural solution”: ALFANO & MARWELL (1980) found that cooperation among group members increases significantly when contributing to a non-divisible public good and payoff return is spent on a group activity rather than only individually. KOLLOCK (1998) adds that the non-divisibility of the good may reinforce a sense of group identity and interdependence among the subjects, leading to group reciprocity.

Opposite to economic predictions based on rationality, there is empirical evidence that people do sacrifice part of their potential individual reward and cooperate to benefit the collective (CAMERER, 2003). MESSICK & MCCLINTOCK (1983) explain that such cooperative sacrifice might be result of social value orientation, communication about the dilemma, the creation of trust, social norms, and group identity or affiliation with others impacted by the dilemma.

Taking into consideration the great importance of group identity as enhancer of collaborative behavior in Multiple-person dilemmas, this section will be focused on this variable and its relation with group cohesion and voluntary organization.

3.4.1 Group Identity

According to the Social Identity Theory, people tend to classify them-selves and others into various social categories, such as organizational membership, religious affiliation,

gender, and age cohort (TAJFEL & TURNER, 1985). ASHFORTH & MAEL (1989) argues that social identification is a perception of oneness with a group of persons; which stems from the (i) categorization of individuals, (ii) the distinctiveness and prestige of the group, (iii) the salience of out-groups and other factors that traditionally are associated with group formation.

TAJFEL AND JOHN TURNER (1979) state that social identity has three major components: First, categorization is the process of putting people, including ourselves, into categories, for example labeling someone according to his gender, religion or occupation. Social psychology experiments found that people put themselves and others into basic categories rapidly and easily. Second, identification is the way in which we associate ourselves with different groups. In-groups are groups we identify with, and out-groups are ones we do not identify with. And finally, comparison is the process by which we compare our groups with other groups, creating a favorable bias toward the group to which we belong.

Social identity is a key for the understanding of individual and group behavior. SHIH ET AL. (1999) studied experimentally the relation between group identity and stereotype susceptibility with an Asian-American group of undergraduates. The first third of the group answered a questionnaire focused on their female identity, the second third answered a questionnaire focused on their Asian identity and the last third – control group – answered a neutral questionnaire. Next, all of them answered a math test. Results showed that the sub-group focused in Asian identity performed better in the math test than the others. SHIH ET AL. (1999) concluded that women's performance in the test was significantly influenced by stereotypes associated with their identity, for example, Asians possess excellent quantitative skills and women do not.

HINKLE (1989) defines Group Identity as a members' positive attitude toward the group that consists of cognitive, affective, and behavioral components. Group identity and expectation of reciprocity has been shown to have potent effects on people's willingness to contribute toward their collective welfare, implying that the construction of group boundaries and the signaling of group membership are of fundamental importance to the study of social dilemmas (DAWES ET AL., 1988; KOLLOCK, 1998).

Group identity boundaries are extensively mentioned in the literature. KRAMER & GOLDMAN (1991) found that within groups with strong group identity, proselves

individuals' decision are more likely to be influenced by it, since their motives are transformed from the personal to the group level, thus increasing cooperation. ZDANIUK AND LEVINE (2001) found that people under high group identity conditions are less likely to leave their group, even under difficult circumstances, because members behave under non-abandonment norms, which stipulate that people who identify themselves with a group should remain in the group and receive the same outcome as everyone else. In an organizational context ASHFORTH AND MAEL (1989) states that just as a strong group identity unifies group members, so should a strong organizational identity unify organizational members.

3.4.2 Group cohesion

KLANDERMANS (1988) attributes most nonparticipation in collective action, not to free-riding, but to an expectation that collective action will fail. There are theoretical arguments to believe that a group functioning as a collective will be a more effective group and that group identity and group cohesion have great potential to improve in-group expectation of success in goal achievement (WANG, 2006; ROSE-ANDERSEN, 2008). According to GOODMAN (1987), group cohesion is the best summary representation of the social-psychological variables present in the study of groups.

Cohesion is defined as the tendency of a group to stick together and remain united in the pursuit of its goals and objectives. Group cohesiveness has been studied in diverse settings such as military units, sports teams, economic organizations or therapy groups (THOMPSON ET AL, 1998). Although cohesion has several definitions, the typical views agree that cohesion constitutes those forces which cause members to remain within a group and/or to resist centrifugal forces (CARRON AND WIDMEYER 1995).

BELLAH ET AL. (1992) asserts that participation in a voluntary organization encourages and demands a sense of belonging. A cohesive group is one whose members are bonded to one another, and to the group as a whole and whose members have often the sense of solidarity, harmony, and commitment. Cohesive groups have a high degree of group identity and commitment to the group task. Even though it is the people who experience the sense of commitment and solidarity toward the group, cohesion is considered a property of social systems rather than individuals (WANG, 2006; GOODMAN, 1987).

Although, the impact of group cohesion may not be a sufficient predictor of group performance (WANG, 2006) because the sustainability of performance gains

obtained from collective participation may depend on the degree of cohesion within work groups (THOMPSON ET AL. 1998), several authors stress the importance of studying how a group functions as a cohesive unit, since it has been shown that high cohesion groups are more likely to succeed in accomplishing their goals and objectives (CARRON AND WIDMEYER 1995). LEANA (1999) argues that the group members' willingness and ability to prioritize collective goals and actions rather than their individual goals, are primary sources for organizational social capital. Group building through individual and organizational investment is primary to strengthen group identity and collective action capacities among collective actors.

Summarizing, Cohesion serves as a collective orientation that depends on social relations and produces a group "culture", which organizes interaction and encourages continued participation (OWEN, 1985). This study will be partially focused on the role of cohesion in the development of voluntary organization.

3.4.3 Group Identity and group cohesion in quality assurance

According to GAERTNER ET AL (2001), the development of in-group identity helps form a basis for group cohesion. Mainly reflecting the feelings of attraction among group members, group cohesion as group identity is also a crucial element for the functioning of an organization, in the sense that it may strengthen positive social identity (DOOSJE, ELLEMERS, & SPEARS, 1995).

Appropriating group identity and group cohesion concepts to "the achievement of high quality standard goals in collective marketing", group identity will emphasize members' positive attitude toward the group and group cohesion will emphasize the socially oriented basis for group unity; as built partially by a willingness to participate and a commitment to improve products quality (WANG, 2006; HINKLE, 1989). The willingness to become a group is considered as a voluntary organization action, which success depends on the potential that group action will improve members' expected net benefit streams above those achieved without participation (SHIFERAW, 2011).

3.5 Summary

Cooperative behavior in collective marketing is a key component for the success of economic endeavors. However, self-interested behavior precludes cooperation when group rationality is in contradiction with individual rationality and where self-interested behavior is influenced by social dilemmas. Based in the theory, social dilemmas faced

by collective marketing can be modeled as Multiple-person dilemmas, which make the goal of reaching high quality standards within collective marketing initiatives one of the most challenging areas due to technological and organizational limitations.

Quality assurance as a social dilemma situation can be modeled as a Multiple-person public good dilemma or a common dilemma, where the joint good is a common market. Several successful examples show that collective action among farmers and other actors of the supply chain are helpful to overcome some market barriers, such as quality assurance. However, a complete and strong organizational structure is needed to enhance relationship commitment and therefore prevent opportunistic behavior.

There are several strategies to overcome social dilemmas and group identity is considered one of the most powerful to enhance cooperation strategies. It is defined as a members' positive attitude toward the group, having a potent effects on people's willingness to contribute toward their collective welfare. In addition, group identity is one of the main factors leading or present in group cohesion, which is defined as the tendency of a group to stick together and remain united in the pursuit of its goals and objectives. High cohesion groups are more likely to succeed in accomplishing their goals and objectives.

Group identity and group cohesion are key factors to enhance cooperation. In the context of collective marketing, both factors may lead to cooperation among farmers to improve and maintain high quality standards which might lead to a better off situation under voluntary organization that under individual participation in the market.

4 Research Methods

4.1 Introduction

This chapter deals with the research methods and methodology applied to achieve the two interrelated specific objectives of this thesis: (i) *to find out if the theory of collective action and social dilemmas can partially explain “quality manipulation” practices in the supply chain and its implications* and (ii) *to design and justify the use of an experimental game confronting farmers in a “quality manipulation” social dilemma and evaluate possible enhancers of cooperation.*

Even though this thesis is related to quality manipulation along the fine cocoa supply chain and its implications in small farmers’ market access, the applicability of its findings is not restricted within that context. Quality assurance issues among small farmers are not restricted to cocoa. There is a wide range of problems in different agricultural activities related to the individual decision of small farmers to meet high standards of quality and safety assurance and its direct and indirect relation to their market opportunities.

Said this, on one hand a valuable aspect in the achievement of the first objective relates to the theoretical analysis of the specific stated problems and its applicability to homologous problems involving small farmers and supply chain. On the other hand, a valuable aspect in the achievement of the second objective relates to the use of experiments as a suitable tool to gather more information regarding small farmers’ behavior and possible enhancers of cooperation.

In chapter 1 – Conceptual framework – an exploratory work regarding the fine cocoa supply chain in Ecuador, its main stakeholders and the dynamics and implications of quality manipulation practices was done based on secondary data and official reports. It was found that there is no accurate information about the problematic. For instance, there are no studies at the national level studying the problem, but there are several projects proposing possible solutions.

In chapter 2 – Theoretical framework – it was found that little literature oriented to social dilemmas problems and collective action in the context of smallholders and supply chain has been developed. Such literature scarcity becomes even more evident in the use of experimental approaches in the same context. However, the vast literature that has been produced in social dilemmas and collective action in others fields of

study, e.g.: natural resource management presents valuable lessons to be learned and applied in this area of research.

An important contribution of this thesis work will be the study and analysis of the possible existing relation between the stated problem and the reviewed theories. The first objective has been initially addressed in the two previous sections (chapter 2 and 3). In order to fulfill its accomplishment, this research takes one step further through the collection and analysis of primary information gathered from key actors in the fine cocoa sector in Ecuador. By comparing theory with practice, the researcher will gain a better understanding of the issues surrounding quality manipulation practices and so be better placed to contribute to the fulfillment of the second objective.

This section – Research Methods – will provide the details of the methodology adopted to address the two specific objectives of this thesis. In addition, potential limitations and problems of the chosen methodology are discussed.

4.2 Research Strategy

In order to select the more suitable strategies for the fulfillment of this thesis' research objectives, the author has taken into consideration three main aspects: (i) research strategy suitability, (ii) time and resource constraints and (iii) knowledge resources.

In the first aspect – research strategy suitability – it was taken into account that this research work has two interrelated objectives based on two different hypotheses. Furthermore, the achievement of both objectives might need two different research strategies. On one hand, the first objective relies heavily on a critical analysis of the theory explanations of a “real world” problem, while on the other hand the second objective requires empirical work.

Next, in the second aspect - time and resource constraints – the time and budget available to fulfill the different tasks within the thesis work were considered realistically. Finally, the third aspect – Knowledge resources – was acknowledged as an opportunity to overview and discuss different research strategies through participation in: (i) the Study project “Impact Evaluation of Extension Service in Vietnam”, lead by Dr. Susanne Hofmann-Souki and Dr. Thomas Aenis, (ii) the “Working Group on Field Experiments in Agricultural and Resource Economics”, lead by Dr. Dimitrios Zikos in HU and (iii) the workshop “Experiments in the lab and field

on governance of Social-Ecological Systems” facilitated in HU by Assoc. Prof. Marco Janssen (ASU).

There is a wide range of tested research strategies in the literature; furthermore, it is of primary importance to select the one which best suits the ongoing research. BIGGAN (2008) summarizes some of the strategies more used in research:

Table 2 Research strategies described by Biggam (2008)

Research Strategy	Description	Example
case study	It is a study of one example of a particular type.	Oxford University is one example of a particular type of university, i.e. historical universities.
Survey	It is a representative selection from the population of a particular type.	A survey of 30 universities from the population of universities in the UK or a survey of 200 retail companies in Europe.
Experimental research	It is used when the research interest is a causal relationship.	Testing of a hypothesis based on a theory
Ethnographic research	It is the study of people in their natural environment, in effect, the study of cultures.	The study of Amazon tribes
Historical research	It focuses primarily on events that occurred in the distant or recent past.	The conditions under which soldiers lived during the First World War
Action research	The researcher is involved in the research not just as a (research) observer but as a participant in order to solve or understand better a particular problem.	The researcher is part of his own research and his participation can influence his findings.
Grounded theory	It is a study which does not start with a clear set of research objective but follows according to the research progress.	

4.2.1 Qualitative survey

The first objective has been significantly tackled by the conceptual and theoretical framework, however, in order to complement this information it is considered that analysis of qualitative primary information about how quality manipulation affects the

fine cocoa supply chain is needed. Why? Because there is very limited academic research and official information (Governmental) exploring the topic, most of the description of the problematic is available from ICCO sources. Therefore, local experiences might be enriching in the theoretical understanding of a practical problem.

YIN (2003:13) states that “*A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*”. BIGGAM (2008 P.224) quotes SAUNDERS ET AL (2000:92) “*we would argue that case study can be a very worthwhile way of exploring existing theory and also provide a source of new hypotheses*”. Based on the literature, a case study strategy could fit the needs of primary information in order to achieve the first objective. Nevertheless, this strategy could be time and budget demanding, thus it is not suitable.

Even though many qualitative studies explore cognitions and behaviors in small samples of a population through different kind of interviews, this type of research strategy is still not formally defined in the literature. JANSEN (2010) argues that these studies may well be typified by the label “qualitative survey”. Such research strategy is casually used in many fields of study, such as sociology, education, communication, religion, among others.

JANSEN (2010) distinguishes qualitative and statistical survey as follows: In contrast to statistical survey which aims “*to gather information from (a sample) of entities for the purpose of constructing quantitative descriptors of their attributes of the larger population of which the entities are members* (GROVES, 2004:4)”, a qualitative survey aims “*to determine the diversity of some topic of interest within a given population*”. FINK (2003) recommends qualitative survey analysis for the exploration of meanings and experiences.

Based on the literature and three selection aspects settled by the author, “Qualitative survey” is considered a suitable research strategy for the first objective achievement.

4.2.2 Field experiments

As stated in chapter 1, the two objectives of this thesis are interrelated. The fulfillment of the first objective and acceptance of its working hypothesis “Quality manipulation at the small farmers’ level is a typical multiple-person social dilemma, which could be

improved through collective marketing as a form of collective action”, are preconditions for the fulfillment of the second objective.

Experimental research as the main strategy for the accomplishment of the second objective was considered appropriate, since it is focused on cause – effect relationships through the separation of a particular phenomena from their social context. Considering quality manipulation practices as the particular phenomena taking place in the context of the supply chain, an experimental strategy could bring in depth information related to *how* and *why* small farmers take the decision of manipulating or not the cocoa quality and *which* variables could lead to a cooperative behavior in the eradication or decrement of the practice.

Experiments in social sciences are “*based on behavioral approaches of decision making and experimental techniques, aiming to address common biases of economic valuation*” (ZIKOS, 2012). LEVITT AND LIST (2007:2) stress the great importance of experiments in economics from mid-1960s. The lab experiment use and development increased dramatically during the 1980s, mainly in psychology and economics, yielding an average of 200 published papers per year. Even though human behavior is susceptible to a wide range of factors, which at the same time vary between the lab and the “real world” situations, lab experiments to study human in the lab not only rely on monetary incentives, but also on: (i) *the presence of moral and ethical considerations;* (ii) *the nature and extent of scrutiny of one’s actions by others;* (iii) *the context in which the decision is embedded;* (iv) *self-selection of the individuals making the decisions;* and (v) *the stakes of the game.*

Traditionally, most of the lab experiments have involved students as their experimental subjects. For example CHAMBERLIN (1948) performed an experiment in Harvard University with students to study market imperfections. He started his article with a conscious acknowledge of a methodology that was being used for first time in the history of the economy:

“On one hand, the data of real life are necessarily the product of many influences other than those which it is desired to isolate – a difficulty which the most refined statistical methods can overcome only in small part. On the other hand, the unwanted variables cannot be held constant or eliminated in an economic “laboratory” because the real world of human beings, firm, market, and governments cannot be reproduced artificially and controlled. The social scientist who would like to study in isolation and

under known conditions the effect of particular forces is, for the most part obliged to conduct his “experiment” by the application of general reasoning to abstract models. He cannot observe the actual operation of a real model under controlled conditions. The purpose of this article is to make a very fine breach in this position...”

Even though lab experiments have been widely used in economics, making significant contributions, CHAMBERLIN’S (1948) position is still acknowledged among the scientific community. According to OSTROM (2007), laboratory experiments are useful methodological tools to study particular theories. However when cooperative behavior is involved, this type of experiments have a limited scope and might fail in the attempt to understand individual motives that are often explained and influenced by social norms.

In the last decades, one of the research areas where experimental approaches are being currently explored in a novelty way is natural resource management. For example, CARDENAS ET AL (2008) inspired by the ground-breaking work of OSTROM ET AL (1993) in common pool resources experiments, translated theoretical considerations into the practical format of experimental games to test them in Colombia and Thailand with stakeholders: the forestry game, the fishery game and the water irrigation game. These type of experiments are labeled as “field experiments”.

CARDENAS ET AL (2008:2) stress that field experiments in social as in natural sciences have *“expanded the wealth of research by heading the field and run experiments with subjects that are familiar with the problem in question”*. In order to properly differentiate experimental methodologies, HARRISON AND LIST (2004) propose the following taxonomical terminology, recognizing certain studies might not entirely fit into this classification:

Table 3 Experiment taxonomy proposed by Harrison and List (2004)

Terminology	Subject pool	Framing	Rules
Conventional lab experiment	Standard: students	Abstract	Defined
Artefactual field experiment	Non – standard	Abstract	Defined
Framed field experiment	Non – standard	Field context: commodity, task, or information set that the subjects can use	Defined

Terminology	Subject pool	Framing	Rules
Natural field experiment	Non – standard	Environment where task take place naturally	Subjects do not know they are in an experiment

BRAÑAS-GARZA (2011) add two categories to this taxonomy: (i) Randomized controlled experiments – mainly used in the construction and implementation of programs or public or private policies – randomly separates a control group from some groups for different treatments; and (ii) natural experiments, which occur incidentally and do not require a previous design. These two types of experiments differ from those classified by HARRISON AND LIST (2004) in concept and methodology.

In the field of economics development, field experiments could be a powerful tool to explore the implications and opportunities emerging from the typical economic-political characteristics of developing countries, such as poor capacity for policy implementation, centralization, inequity, or high dependency on natural resources (BRAÑAS-GARZA, 2011). Based on the experiment classification reviewed and taking into account that a better understanding of social dilemmas hindering a better performance of small farmers in the supply chain is closely related to the socio-economic development of rural communities involved in developing countries; framed field experimentation is considered a suitable research strategy in this research.

However, its full implementation in this thesis work would exceed the time and resource available. Quoting the experience of the researchers Juan-Camilo Cardenas, Marco Janssen and Francoise Bousquet in the development and implementation of the “Forestry game”, “Fishery game” and “Water irrigation game”: *“After a two year period of presenting designs we were able to head to the field for the final experiments...”* (CARDENAS, ET AL 2008:6). Therefore, this research strategy will be partially implemented through a trial design of a framed experimental game and a short protocol for its further development in the future. This research strategy is suitable in the three defining aspects stated by the author at the beginning of this chapter.

4.3 Data collection

Qualitative research has been widely used in survey and experimental research strategies. It has an important “exploratory” role in qualitative studies in order to build basis for further development of questionnaires and identify variables for experimental approaches (KURASAKI, 2000). This thesis work can be considered an exploratory

research, in the sense that there is no specific academic research tackling quality manipulation problems in the supply chain as a social dilemma. Furthermore, as an exploratory first step in the specific context of fine cocoa in Ecuador, this study will mainly gather qualitative data.

4.3.1 Qualitative survey

For the achievement of the first objective, qualitative survey has been defined as a proper research strategy. In order to collect the necessary data it is mandatory to define who (sample) and how (method) will be approached. Four main aspects have been considered to select the proper sampling and data collection method: (i) suitability, (ii) availability of the actors, (iii) willingness of the actors to participate and (iv) logistic constrains. The first aspect is based on the literature and complemented by the following features related to the other three aspects:

- The main logistic constrains in the development of this thesis work has been the long distance between the main actors' location (Ecuador) and the researcher's location (Germany).
- The data collection method needs to be performed via telephone and via internet.
- The availability of certain actors in the rural area might be limited due to technical issues, such as low internet quality or difficult access to telephone.
- The willingness of the actors to participate in this research might vary, since the lack of face-to-face communication could have a significant impact on the actor – researcher trust relation.

In terms of sampling in a qualitative survey, JANSEN (2010) points out that covering all existing varieties of the phenomenon intentionally within the sample is logical and efficient. This task is denominated saturation, which depends on the type and degree of diversity that is judged relevant. However, it is important to keep in mind that to cover the entire diversity spectrum might neither be possible or necessary. An example can help to illustrate this point: In order to be sure that all forms of diversity are covered in a study about the coats that students wear, it would be necessary to include the whole population in the sample, since the number of colors that our brains and eyes can distinguish is innumerable. Nevertheless, for a particular study, ten colors

may provide sufficient saturation, enough to be distinguished within the sample. Thus, the research sample for the qualitative survey will involve farmers, intermediaries, exporters, policy makers and experts as main actors of the fine cocoa supply chain.

The selection of a suitable method for data collection has been carried out based on the eight qualitative methods to gather data described by MARSHALL ET AL (1998), and categorized according to the data source by POLKINGHORNE (2005) (Table 4).

Data collected directly in words from people through interviews is considered the most appropriate for this study. In order to facilitate a free flow of ideas from the subjects and generate information – rich data, the data will be collected via telephone/video conference through semi structured interviews with an open – ended interviews format.

FAO (1990) describes semi-structured interviews as a tool with a fairly open framework which allow for focused, conversational, two-way communication. Where not all questions are designed and phrased ahead of time and the majority of questions are created during the interview. Thus, allowing both the interviewer and the person being interviewed the flexibility to probe for details or discuss issues. Its difference with an unstructured interview relies in that a semi-structured interview is guided for an interview guide which provides a flexible framework for the interview.

Table 4 Categories and methods for qualitative data collection

Categories	Methods	Description
Data collected directly in words from people	Interviews: <ul style="list-style-type: none"> • Structured Interview • Semi-structured Interview • Unstructured Interview 	One-on-one question-and-answer sessions where the researcher may use a variety of techniques. Interviews average 30–45 minutes per person.
	Focus group	Group interviews, using the same variety of techniques and taking approximately the same length of time as interviews.
Data collected once or throughout a process of change	Reflective journals	Handwritten or verbal account of an event, or group of events, over time. These often unveil how writers subscribe meaning to their topics
	Field notes	Written explanations or data taken, often by multiple observers at a single event, capturing interactions of interest to the larger topic under study.

Categories	Methods	Description
Data collected during the event(s) being studied	Anecdotal evidence and logs	Data taken from people often outside the research team that report the facts of the interactions as understood by the writer.
	Observation: <ul style="list-style-type: none"> • Participant observation • Non-participant observation 	Stylized note taking about predetermined portions of an event or group of events under study, generally taken by more than one observer. Observations often tally the number of times an event has taken place.

Source: Adapted from MARSHALL ET AL (1998) and POLKINGHORNE (2005)

4.3.2 Field experiment

In order to design a trial experimental game, a prior understanding of the stated problem is needed. Furthermore, the data collected in the qualitative survey for the first objective’s achievement, will be valuable also for the development of the second research strategy. In addition, a significant part of the data collection for the development of this research strategy, is the academic discussion with researchers in the field of experiments and the review of existing experiments which might serve as basis for the development of a new one.

This process will be facilitated through the academic participation in (i) the “Working Group on Field Experiments in Agricultural and Resource Economics”, lead by Dr. Dimitrios Zikos in HU and (ii) the workshop “Experiments in the lab and field on governance of Social-Ecological Systems” facilitated in HU by Assoc. Prof. Marco Janssen (ASU).

4.4 Framework for data analysis

4.4.1 Semi-structured interview

In order to synthesize the qualitative data gathered from the open – ended interviews, an exploratory analytic process after the data collection is necessary. The process of analysis of data gathered through interviews can be inductive (without a predefined coding list) or deductive (with a predefined coding list) (JANSEN, 2010). The data collected will be analyzed in both ways, first deductive and next inductive as shown in Table 5.

Table 5 Framework for qualitative data analysis

Step	Description	Example
1	Define Categories for the interview guide beforehand	Category 1= a Category 2= b Category 3= c
2	Conduct the semi structured interview to collect data	Data: a, a, b, b, c, c, c, c, d, d, a, a...
3	Find uncovered categories	Category 1= a Category 2= b Category 3= c Category 4 = d
4	Organize and analyze data	1. aaaaaaaaaa 2. bbbbbbbbbb 3. cccccccccc 4. ddddddddd

Source: Based on JANSEN (2010)

4.4.2 Field experiment

The process of data collection, discussion and analysis of the experimental idea consisted in the active participation in two academic activities:

Table 6 Framework for development and analysis of trial design field experiment

Academic activity	Description	Participants
“Working Group on Field Experiments in Agricultural and Resource Economics” facilitated by Dr. Dimitrios Zikos in HU	<ol style="list-style-type: none"> 1. Discussion of participants’ experimental ideas 2. In depth discussion of various experimental studies in the literature 	<ul style="list-style-type: none"> - Facilitator - Doctorate students - Thesis’ author
Workshop “Experiments in the land and field on governance of Social-Ecological Systems” facilitated in HU by Assoc. Prof. Marco Janssen (ASU) from 11 th to 27 th June of 2012.	<ol style="list-style-type: none"> 3. Discussion of initial designs of student groups 4. In depth discussion of various experimental studies in the literature 	<ul style="list-style-type: none"> - The groups consisted of 15 students (10 doctorate students and 5 master students). - Each group was lead by one of the students, whose experiment would be further developed,

Academic activity	Description	Participants
	5. Development of experimental design in groups 6. Discussion of the design of student groups 7. Pre test of experiments of the groups 8. Final discussion	discussed and pre tested within the group. - The experiment in quality manipulation was developed and discussed with one of the groups and analyzed and pre tested with the complete group and the facilitator.

4.5 Summary

In order to select a suitable strategy for the fulfillment of the research objectives, the author has taken into consideration three main aspects: (i) research strategy suitability, (ii) time and resource constraints and (iii) Knowledge resources.

The research strategy for the achievement of the first objective is “qualitative survey”. The sampling and data collection method within this strategy was determined according to: (i) suitability, (ii) availability of the actors, (iii) willingness of the actors to participate and (iv) logistic constraints. Thus, the research sample will involve farmers, intermediaries, exporters, policy makers and experts as main actors of the fine cocoa supply chain and the data will be collected directly in words from people through semi structured interviews in an open – ended format.

The second research objective will be achieved through an experimental approach. Framed field experiments are considered appropriate for this specific case; however the full development of this type of experiment might need several months of tests and preparation. Therefore, this research strategy will be partially implemented through a trial design of a framed experimental game and a short protocol for its further development. In this case, data collection will refer to the knowledge resource and academic discussion of the experimental idea in (i) the “Working Group on Field Experiments in Agricultural and Resource Economics”, lead by Dr. Dimitrios Zikos in HU and (ii) the workshop “Experiments in the land and field on governance of Social-Ecological Systems” facilitated in HU by Assoc. Prof. Marco Janssen (ASU).

Along this chapter, methodological and logistic limitations and possible problems are acknowledged by the author. In the methodological side: (i) experiments cannot

observe the actual operation of a real model under controlled conditions, but can contribute with valuable information and (ii) qualitative surveys are vulnerable to systematic and nonsystematic errors in the tasks of developing and applying codes to the data. In the logistical side: the main logistic constrains is the distance between the main actors' location (Ecuador) and the researcher's location (Germany) and possible technical issues in their communication.

5 Results

5.1 Outcome 1

As stated in chapter 1, the first expected outcome of this thesis is a comparison between the relevant theories in social dilemmas and collective action, and the stated problem, in order to answer the first research question (Figure 7).

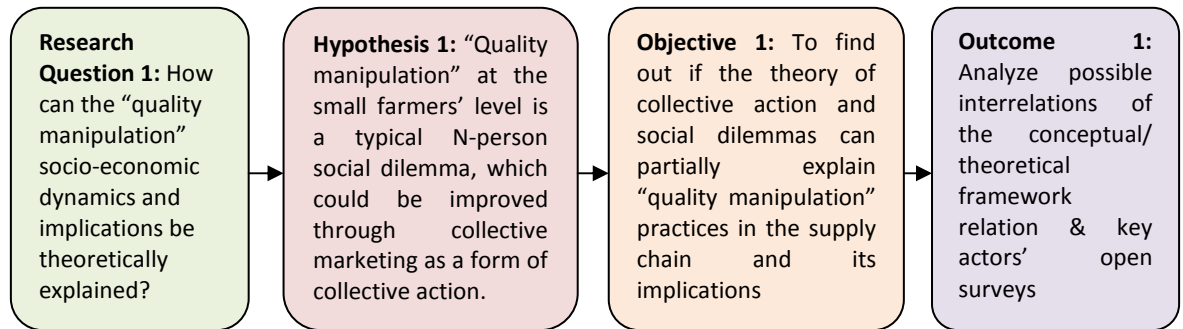


Figure 7 Pathway from research question 1 to the first thesis outcome

Based on the conceptual framework, theoretical framework and primary information provided by key actors in the fine cocoa sector (See Annex 2 and Annex 3); the first working hypothesis is accepted and explained as follows (see **Error! Reference source not found.**):

5.1.1 “Quality manipulation” dynamics and consequences: traditional supply chain

In the left side of the figure 8, the blue inverted triangle represents from the tip (in the bottom) to the top, how the sum of fine cocoa actors’ individual decisions in mixing or not Fine/Bulk cocoa results in a low quality supply at a National level, which means a high level of mixture of bulk cocoa within the fine cocoa shipment.

This cocoa with insufficient quality is traded to the international clients, which disappointed by the low purity of the product communicated a complaint to ICCO. As a consequence, lower recognition as a fine cocoa producer country is imposed as a sanction to Ecuador. The premium price received for quality, over the base price, is affected as a result of the sanction and losses in trust market relationships.

The consequences in terms of lower prices for fine cocoa, are represented by the green triangle. The tip represents how the sanctions are imposed to Ecuador and the base represents how this national level’s sanctions have direct implications on all the actors

along the supply chain: exporters, itinerant/small/wholesale intermediaries and finally producers, which are the majority and the most vulnerable.

5.1.2 Fine cocoa sanctions' implications for small farmers : traditional supply chain

As a response to the quality manipulation problematic and to the sanctions imposed by ICCO, the Ecuadorian government has implemented different strategies to improve quality and reputation. One of the most important changes is: AGROCALIDAD, currently responsible to ensure quality of fine cocoa along the supply chain and approve its export according to its characteristics. At the same time, this institution is working in the certification of storage centers, exporters and intermediaries. In the last two years, significant reduction in complaints due to low quality has been observed; however there is still lack of public information regarding the levels of quality manipulation along the chain.

Large scale exporters have increased their monitoring and evaluation interventions in their storage center. In order to avoid the risk of paying high prices for quality products that may not be satisfactory, the price offered to farmers is lower than expected for a good quality/purity provision.

Small farmers in the traditional supply chain are characterized a having a low bargaining power. Small scale producers are not able to produce representative amounts of product in order to have a more direct and independent relation with the medium size intermediaries or exporters. Therefore, they are subject to low or no recognition of differentiated price of their fine cocoa.

Due to the lack of incentives and financial capital to invest in the crop as well as to post-harvesting processes, independent small farmers rely heavily on itinerant/small intermediaries. The market accesse conditions through different types of intermediaries are variable among small farmers. The formality or informality and price opportunities with local traders are according to the farmers' geographical locations, access infrastructure and their social network, among other factors.

Small farmers located in areas with difficult accessibility conditions and low production volume, are heavily dependent on itinerant intermediaries who buy the product informally along the roads or in other places within the villages. Since intermediaries do not pay a differentiated price for fine and bulk cocoa, their

requirements for quality standards are low or null. Small farmers lack the motivation to differentiate fine from bulk cocoa and resort in quality manipulation practices in order to maximize their market opportunities in terms of quantity with local traders under no-differentiated price conditions.

Small farmers with better location conditions and higher accessibility to storage centers are more likely to commercialize their products through small intermediaries. Since quality evaluation processes is not as reliable and might represent important costs for a small trader, under this conditions there is still a low or null price differentiation between fine and bulk cocoa. Furthermore, in order to maximize individual profits, small farmers and possible itinerant traders involved, resort in quality manipulation practices.

There is also the possibility that small farmers find the opportunity to sell their products to larger exporters or farmer organizations. However, due to the low reliability on their product quality, not only in terms or variety purity, but also in terms of good management in the post harvest process, their product experiences low price recognition and differentiation. Furthermore, quality manipulation practices are still an attractive option to increase their income.

5.1.3 “Quality manipulation” dynamics and consequences: specialized supply chain

Quality manipulation is a common practice along the supply chain; nevertheless, international clients have recognized more reliability in fine Ecuadorian cocoa originated from farmers’ organizations, prestigious exporter companies or certified medium/big scale farmers.

Even though, ICCO sanctions affect all the actors along the supply chain, including farmer organizations. There is evidence that some farmers’ organizations have been able to maintain and improve their market relations through the strengths of their trust relation. In spite of the fact that Ecuadorian fine cocoa does not enjoy the 100% of premium price as recognition of quality anymore, farmers’ organizations are able to access competitive premium prices through specialized supply chains.

Farmers’ organizations are involved in several steps from the harvesting process to exportation. In order to reach high and homogeneous quality standards, the organizations have developed different systems to collect the product, determine its quality using traditional organoleptic tests and implementing collectively post-

harvesting processes such as drying and fermentation. In addition, intrinsic rules, norms and incentives have been implemented in order to keep high quality standards within the groups and a respectful reputation as a supplier organization.

Small farmers have a higher bargaining power through farmers' organizations collective marketing. Since the sum of their production volume in some cases is able to reach minimum required amounts to export independently. In other cases farmers' organizations also buy product from non-members, however due to the low trust in their product, they do not offer the same price recognition to them. For small farmers' organizations or those who have no direct access to the international market yet, there are also different kinds of arrangements with large exporter companies.

Some farmers' organizations have received prizes and international recognition for their performance, for example MCCH or UNOCACE are well recognized as suppliers of high quality product. Organization members enjoy good reputation as individuals and as part of an organization in terms of fine cocoa producers within the community. In addition, their effort for keeping high quality standards is recognized with a differentiated price. These factors encourage them to avoid quality manipulation practices in order to maintain a joined market access in conjunction with the other members.

5.1.4 Fine cocoa sanctions' implications for small farmers: traditional supply chain

According to information gathered during the interviews, the quality manipulation practices are more intensively done during the intermediation phase. On one hand, one of the reasons is that sometimes it is not possible for the itinerant or small intermediaries to collect enough volume of the same type of fine cocoa. The variability within the same variety can be due to type of fermentation applied or microclimatic factors within the location. The other reason is that when the price of the fine cocoa is lower, intermediaries mix bulk cocoa within the fine cocoa to maximize individual profit, taking as an advantage the technological disadvantage to accurately evaluate quality in the field. These types of intermediaries usually do not make price differentiations. Furthermore, when farmers only provide them with pure fine cocoa products (small farmers might have only have fine cocoa plantation), intermediaries find an advantages to sell a mixed product for a higher price to larger intermediaries.

The high tendency to manipulate qualities along the traditional supply chain leads to a decrement in the specialized market opportunities for non-organized small farmers, since the product which goes through this long chain of actors lacks reliability in terms of variety purity due to its low homogeneity because of its large diversity of origin.

5.1.5 The role of social dilemmas in the quality manipulation practices within the supply chain

At the top of the graph, over the green triangle tip, the international market is represented as a filter for the supply of pure/impure fine cocoa, which due to quality manipulation through the supply chain has lost trust in the Ecuadorian product. The consequences from the country level to the individual level are the reduction in the premium price for fine cocoa. Consequently the country is subject to market sanctions leaving small farmers with limited access to specialized markets and price differentiation, therefore falling more into poverty.

Making reference to the theoretical review in social dilemmas, which are defined as “*a situation in which two or more persons receive a higher payoff for a non-cooperative choice (defection) than for a cooperative choice, but all members are better off if all cooperate than if all defect (DAWES, 1980)*”. It can be stated that quality manipulation problem is a typical multiple-person social dilemmas, where the common good is the international market and the dilemma is to manipulate or not the cocoa quality in order to maximize their individual profit along the supply chain. Since several individuals behaved in the same way, then a market sanction affects all the supply chain actors, from the small farmer to the large exporter.

5.1.6 The role of collective marketing as a form of collective action in the eradication of quality manipulation practices within the supply chain

As represented in the left side of the graph, in the orange inverted triangle, even though organized farmers have also been affected by the ICCO’s sanction, they still have a better performance than non-organized farmers and the traditional supply chain in general. Based on the literature review and the information gathered in the interviews, it can be argued that this better outcome in terms of quality can be derived from the high incentive provided to members through their collective participation in a specialized supply chain. Organized farmers can enjoy a differentiated price and other organizational and technical benefits from the organization.

Collective marketing can be considered a form of collective action, since small farmers are working together in order to reach the same goal, which is to reach and maintain access to specialized markets in order to ensure competitive prices and improve their income. As in the case of natural resources, where collective action shows a high potential to preserve common resources as for instance forest; in overcoming quality manipulation practices collective action might provide enough incentive to organized farmers to reach high quality standards. In addition, collective marketing shortens the length of the supply chain, providing not only more reliability to the product, but improving income opportunities to small farmers.

Even though, there has been seen a significant improvement in the fine cocoa quality exported in the last year, there are still big challenges. An important point to recognize is that, in spite of this noticeable improvement, still a significant amount of fine cocoa originated from small farmers is traded as bulk cocoa. This represents important market opportunities losses for the country as well as for the small farmers.

In addition, according to the interviews, on the one hand most of the efforts to control quality are at the storage center and on the other hand, most of the support to improve quality is driven to the farmers' organizations, traders and exporters. The problematic at the level of independent farmers still faces big challenges in terms of incentives, reliability and capacity building.

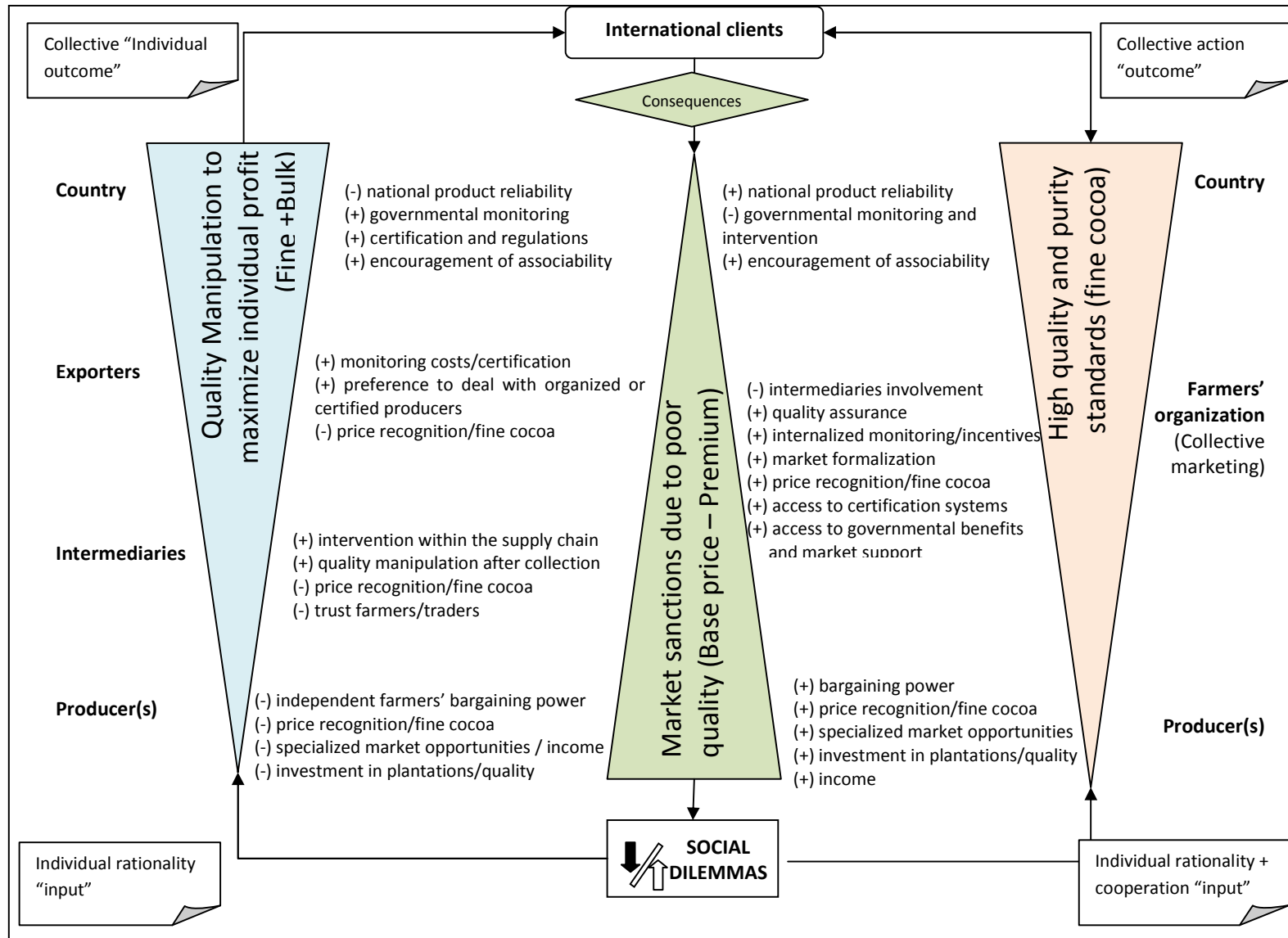


Figure 8 Graphic representation of the quality manipulation problem and implications

5.2 Outcome 2

As stated in chapter 1, the acceptance of the first working hypothesis is a precondition to continue the research pathway and answer the second research question. Since the first hypothesis has been accepted, the second expected outcome of this thesis is a trial design of a framed experimental game confronting small farmers to a quality manipulation social dilemma. In addition, it is also intended to include possible variables which might be meaningful in encouraging cooperation in collective action (Figure 9).

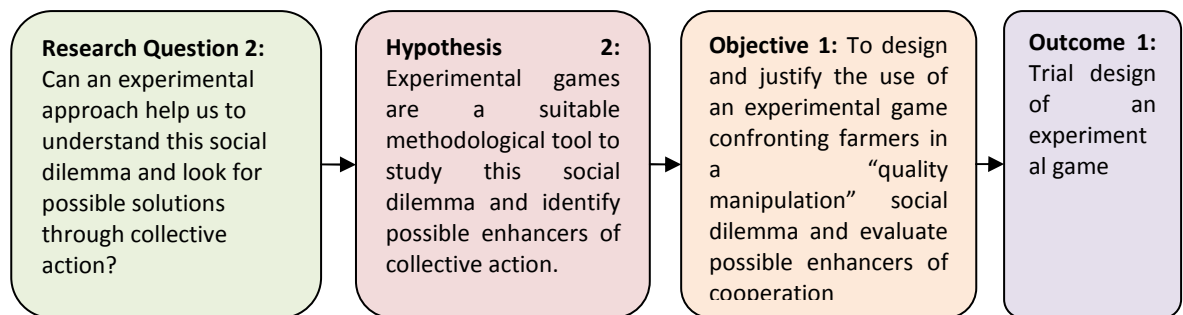


Figure 9 Pathway from the research question 2 to the second thesis outcome

This second outcome is mainly product of literature review in the use of experimental approaches and the sum of academic discussion and participation in the “Working Group on Field Experiments in Agricultural and Resource Economics” facilitated by Dr. Dimitrios Zikos in HU and the workshop “Experiments in the lab and field on governance of Social-Ecological Systems” facilitated by Dr. Marco Janssen between June 10th and June 27th 2012.

As a basis result, it is considered that the use of experimental games is a suitable methodological tool to understand better the decision making process of farmers. However, in order to go one step further and design an experimental game, years of interdisciplinary work and lab tests are necessary. Quoting CARDENAS, ET AL (2008:6): “*After a two year period of presenting designs we were able to head to the field for the final experiments...*”

Having stated the above, the scope of this second outcome is a trial design of a framed game and a short protocol for its further development in the future to be implemented in field conditions. Its implementation could improve our understanding of organized and non-organized farmers behavior and evaluate possible variables that enhance farmers to work together to reach high quality standards and common market destinations. Please see chapter 6 for details.

6 Experimental Design and Protocol for trial experimental game

This experiment has been designed to confront subjects (specifically small fine cocoa farmers) with a social dilemma concerning “quality manipulation” in the supply chain. Taking into consideration the assumption that private and social interest diverges because it is assumed that quality manipulation can increase limited individual revenues but affect market opportunities at a national and local level.

In addition, based on national examples of successful trust market relationships between some cocoa small-farmers organizations and international chocolate industries which buy fine cocoa under high standards of quality and purity (see chapter 1 and 2), this study also attempts to implement the variable “group identity” into the experiment as possible enhancers of cooperation and “group cohesion” as an enhancer for “voluntary organization”.

To study the effect of group identity as an instrument to enhance cooperation within independent and organized farmers in order to prevent the provision of a public bad (in this context it would be the action of adding variables amounts of bulk cocoa within the fine cocoa at farmer level), an experiment has been designed based on a Public Bad game designed by SONNEMANS ET AL (1998) and a game designed by CARDENAS ET AL. (2000) oriented to local environmental control (Annex 5).

The experiment has been framed for field-laboratory conditions, so that players can be aware of the specific relationship of quality manipulation and losses in market opportunities. The four key features for “quality manipulation” in cocoa are:

- i. Fine cocoa has lower yields than bulk cocoa but it is more profitable, it is commercialized under high and strict requirements of quality and purity and it receives an extra prize from the international market for its fulfillment.
- ii. Bulk has higher yields and it can be commercialized under lower and less strict requirements. It doesn't receive premium price for quality or purity.
- iii. Verification of mixtures among bulk and fine cocoa is low reliable without the intervention of specialized laboratories, which are usually not available at the local level.

- iv. Identify the specific origin of the practice it is difficult and costly due the large amount of small producers and the structure of the traditional supply chain.

6.1 Hypotheses

The experiment intends to empirically address the following hypothesis:

H1: Group identity can enforce Group cohesion within farmers in order to prevent “quality manipulation” practices.

H2: Group cohesion can increase famers’ preference to work under a voluntary organization status in order to prevent “quality manipulation” practices

The formulation of the experimental hypotheses is based on the literature regarding to the Social Identity Theory (TAJFEL & TURNER, 1985), the background information about the “quality manipulation” dynamics and implications in the fine cocoa supply chain and primary information collected through open surveys to key actors of the cocoa sector.

In the first hypothesis it is considered that if farmers feel identified with the group they work with, there will also be a higher sense of commitment and concern for reputation. This could lead to the collective individual decision to reach a common goal. The common goal in this case will be to reach high quality standards so that all the members of the group (formal or informal group) can get a higher benefit and minimize the risks.

In the second hypothesis the main interest is to find out if the farmers’ willingness and decision to achieve together a common goal also lead them to become voluntarily a formal group. The interest in this second hypothesis derives from the real problematic in the fine cocoa sector, where in spite of some successful examples of farmers’ organization; there still remain a 90% of non-organized farmers.

6.2 The Subjects

This experimental game is intended to be played in field-lab conditions, taking into consideration the participants’ wide range of formal education levels. Furthermore the trial game is a pencil and paper design. It is important to stress the importance to test the experiment in laboratory conditions before its implementation, in order to improve it properly for the laboratory in the field. The subjects will be:

- i. In laboratory conditions: In order to test the experiment, the experiment can be run with university students related to topics such as economics or agronomy.
- ii. In field laboratory conditions: Independent small farmers and farmer belonging to organizations which livelihood heavily depends in cocoa production. Some locations where the field experiment could take place are shown in the annex 4.

In order to prevent one subject from participating twice or belonging to the same family group, a database should be developed. Based on the CARDENAS ET AL (2008) followed protocol for field-lab games implementation; the recruitment of the subjects for field-lab conditions is suggested to be done via word of mouth and flyers hanged throughout the village. For the recruitment of students, an open call during class hours or flyers hanged in a common board are suggested. Call to students via e-mail might segregate of the opportunity those students without permanent or continuous access to internet.

It should also be taken into consideration formal permission at the level of universities and villages and at the level of students and villagers through a letter of consent and confidentiality of the results.

6.3 The Game

Each session of the experiment should last an average of two hours and involves a total of 5 subjects that will form a group. At least 10 groups should participate per treatment. Two monitors must be present in order to provide instructions, answer questions and control. Subjects must be seated in individual desks with prudential separation and properly distributed according to the location's conditions, in order to avoid looking at each other's answers or communicate.

During the experiment, the researcher will play the role of a fine cocoa buyer, who will pay 2 euro per Kg/fine cocoa and 1.50 per Kg/bulk cocoa. The buyer wants to buy 100 Kg of fine cocoa per group, which means 20 Kg per farmers and will accept up to 4 Kg of bulk per each 100 Kg of fine cocoa (estimating this mixture as a normal result of the post-harvest process). If the number of Kg of bulk cocoa exceeds 4 Kg per group, the buyer will pay 1.50 per kg for the entire group (considering the entire product as bulk cocoa), ignoring its particular provider and the amount of fine cocoa

provided. If the number of Kg of bulk cocoa is equal or less than 4 within the 100 Kg of fine cocoa, the buyer will pay 2 euro per Kg to the entire group, ignoring this amount of bulk cocoa and its particular provider.

In each round, each subject has to decide whether to include or not from 1 to 4 Kg of bulk cocoa to his/her individual delivered 20 Kg of cocoa. Subjects will know that their individual payoff will depend of the total outcome of the group. In order to make it clear for the participants, all of them will receive a pay off table, indicating which would be their individual payoff in the different possible cases. Even though they don't know what will be the others' decision, they know everybody will have the same table; furthermore, their decision will be based on the same payoffs. Next, the subjects receive an answer sheet where they should mark their decision.

Once the subjects have decided for a particular round, a monitor collects all the tables. The second monitor records these individuals' decisions and calculates the individual payoff according to the group the subject is matched to. The randomization on the group formation and anonymity of who the members are in each group will vary according to the treatment. The individual payoff will always be confidential and it is informed to the subjects every round.

When the subjects arrive to the meeting place, the monitors start revising the identification of the participants and give them a private identification number. It is recommended that the experiment lasts no longer than two hours, in order to keep the attention and interest of the participants. At the beginning of each session, the monitor explains the game, the rules, the group and individual payoff during the game and how this will be paid individually in cash at the end of the session. In order to familiarize the subjects with the game procedures and payoff; examples, practice rounds and large visual material hanged in the walls can be provided.

6.4 The treatments

This experimental game is a between subjects design. This means that individuals are exposed to only one treatment and treatments are varied between subjects. As shown in the Table 7, two kinds of subjects will participate: independent farmers and farmers who belong to an organization. Both will be subjected to a control treatment, treatment 1 and treatment 2.

Table 7 Experimental treatments

Subjects	Independent Farmers	Farmers who belong to an organization
Control treatment	Baseline	Baseline
Treatment 1	Group Identity	Group Identity
Treatment 2	Group cohesion	Group cohesion

i. Control treatment:

In this treatment the subjects must be small farmers involved in the commercialization of fine cocoa. The participants will be randomly grouped in groups of 5 members, and their answer will be matched to the other members' answer in order to calculate the individual payoff of each of them. The participants will not know with whom they have been matched. The groups are formed randomly once each round finishes and the monitor will collect the answer sheet from everyone. This treatment will have 5 rounds in order to avoid learning effects among players. The payoff per round will be communicated to each subject individually. Communication is not allowed during the experiment.

ii. Treatment 1:

In this treatment the subjects must be small farmers involved in the commercialization of fine cocoa. In order to evaluate the effect of "group identity", the participants will form groups of 5 members, where they will know with whom they are playing.

To create a sense of identification of the subjects with their groups, each group will have a common name denomination and a common color (this might be a hat or t-shirt) and the experimenter will provide information about each group, reinforcing verbally that they actually are a group. The experiment will have 5 rounds and at the end of each round the group's earnings per Kg of cocoa will be publicly announced. The individual earnings will be communicated individually.

iii. Treatment 2:

In this treatment, participants will be randomly divided into groups of 5 members, and their answer will be matched to the other members' answer in order to calculate the individual payoff of each of them. The participants will not know with whom they have been matched. The experiment starts as the control treatment, and after 5 rounds

players can vote in order to change their status from independent to a farmers' organization during the following 5 rounds. If 3 or more of the players vote "yes", the participants will know with whom they are in the group and the group's earnings will publicly announced. Every next round, the groups who are not in an organization can decide to become one or not.

For example: the experiment starts with a total of 20 players in groups of 5 players and after the fifth round one of the groups decides voluntarily to become an organization. The group might do better or worse than other groups, and the other groups will be aware of it since the results are announced at the end of the round. If the group that decides to become a "farmer organization" does it better, other groups may follow the same decision of becoming a "farmer organization" in the next round. At the end of the game, one group might keep the status of independent farmers and the people within the group will know with whom they are playing, since they are the remaining ones. Either way, their performance is not publicly announced.

6.5 The protocol

This framed experiment was pretested during the previously mentioned workshop. The form has been developed for laboratory conditions in order to play the game with the participants of the workshop. Only one round of each treatment was played with the participants of the workshop, which were a total of 10 students.

The experimental form has three sections: (i) general indications, (ii) examples, (iii) group and individual earning. In this last section the payoff tables are included (see Table 8). The instructions were read individually by the student and communication was not allowed. Students with questions raised their hand and the monitor answered them individually. They answered in a separate sheet (Table 9).

The objective of this pre test was to revise and discuss the experiment among the participants during the workshop. Topics such as understandability, logistic, framing, among others were discussed in the classroom.

Table 8 Experiment form used in the pretest during the workshop

EXERCISE 1

Participant ID: _____

1) General Indications

In this exercise, you will play the role of a small cocoa producer and I will play the role of the Cocoa buyer. I pay 2 euro per Kg. of FINE cocoa and 1.50 Euro per Kg of BULK cocoa. I will buy 20 Kg of FINE cocoa per farmer and I ONLY accept up to 4 Kg of BULK cocoa per each 100 Kg of FINE cocoa provision (a group of 5 cocoa producers sum 100 Kg).

	Player 1	Player 2	Player 3	Player 4	Player 5	Group
FINE Cocoa Quota (Kg)	20	20	20	20	20	100
Permissive Limit of BULK cocoa beans (Kg/Group)	4 Kg of BULK Cocoa out of the total of 100 Kg of FINE cocoa beans of the group.					

The GROUP EARNINGS (Euro/Kg) depend of the number of Kg of BULK cocoa within 100 Kg of FINE cocoa. If I find less than 5 Kg of BULK cocoa within the 100 Kg of FINE cocoa of a group, I still will pay 2.00 euro per Kg. to all the producers ignoring the 1 to 4 BULK cocoa Kg and its particular provider. But, if I find 5 or more Kg of BULK within the 100 Kg of FINE cocoa of a group, I will pay 1.50 euro per Kg to all the producers ignoring its particular provider and the amount of FINE cocoa.

	Number of BULK Cocoa per Group (Kg)					
	0	1	2	3	4	From 5 to 100
Group Earnings/Kg Cocoa	2.00	2.00	2.00	2.00	2.00	1.50

Your INDIVIDUAL EARNINGS (Euro/Kg) will depend of the GROUP EARNINGS and the number of BULK coca Kg added by you. You as the other players can gain independently of the GROUP EARNING, 0.50 cents/Kg of BULK cocoa added within your quota (to sell) of 20 Kg of FINE cocoa.

2) Examples

- If fewer than 5 Kg of BULK cocoa are added within your group, you and all the other producers will receive 2.00 euro/Kg sold. Therefore, you will receive 2.00 euro x 20 Kg = 40 euro

- If 5 or more Kg of BULK cocoa are added in total by the other producers within your group and you didn't add any Kg of BULK cocoa, you will receive 1.50 euro/Kg sold. Therefore, you will receive 1.50 euro x 20 Kg = 30 euro
- If 1 Kg of BULK cocoa is added within your group by the other producers and you added 3 Kg of BULK cocoa, you will receive 2.00 euro/Kg sold plus 0.50 euro/Kg of BULK cocoa you added. Therefore, you will receive (2.00 euro x 20 Kg) + (0.50 euro x 3 Kg) = 41.50 euro

Please check the following tables 1, 2 and 3.

3) Group and individual earnings

Table 1: In this table you can find the extra earnings you could get per each Kg of BULK cocoa you add, ONLY if the total of BULK cocoa Kg within your group sums up to 4 Kg.

	Kg of BULK Cocoa added by you				
	0	1	2	3	4
Individual Extra earnings (Euro/Kg)	0.00	0.50	1.00	1.50	2.00

Table 2: In this table you can find the price paid per Kg of cocoa (euro/Kg) according to the number of BULK cocoa Kg mixed by you and the other producers of your group.

		Kg of "Bulk" Cocoa added by you				
		0	1	2	3	4
Kg of "Bulk" cocoa added by the other players	0 Kg	2.00	2.00	2.00	2.00	2.00
	1 Kg	2.00	2.00	2.00	2.00	1.50
	2 Kg	2.00	2.00	2.00	1.50	1.50
	3 Kg	2.00	2.00	1.50	1.50	1.50
	4 Kg	2.00	1.50	1.50	1.50	1.50
	≥ 5 Kg	1.50	1.50	1.50	1.50	1.50

Table 3: In this table you can find the different possible INDIVIDUAL EARNING that you could get according to the number of BULK cocoa Kg mixed by you and the other producers of your group. The prices/Kg are according table 1. The examples provided in the section EXAMPLES are filled in grey.

		Kg of “Bulk” Cocoa added by you				
		0	1	2	3	4
Kg of “Bulk” cocoa added by the other players	0 Kg	40.00	40.50	41.00	41.50	42.00
	1 Kg	40.00	40.50	41.00	41.50	30.00
	2 Kg	40.00	40.50	41.00	30.00	30.00
	3 Kg	40.00	40.50	30.00	30.00	30.00
	4 Kg	40.00	30.00	30.00	30.00	30.00
	≥ 5 Kg	30.00	30.00	30.00	30.00	30.00

NOTE: Your ACTUAL earnings will be your INDIVIDUAL EARNINGS divided by 10. For example: If your INDIVIDUAL EARNINGS are 40 euro, you will receive $(40/10) = 4$ euro.

Table 9 Table of answer for trial experiment

EXERCISE 1: Answer round # __		Participant ID: _____	
Your Selling Quota	BULK Cocoa (Kg)	Your BULK Cocoa addition(Kg)	Mark Your Choice (ONLY ONE)
20	20	0	
20	19	1	
20	18	2	
20	17	3	
20	16	4	
Staff Use Only:			
GROUP REVENUE/KG		INDIVIDUAL PAYOFF	/10 =
-			

7 General Conclusions

The overall aim of this thesis was to *understand how “quality manipulation” problems along the fine cocoa supply chain affect small farmers’ market opportunities and what is the role of collective marketing in overcoming such constraints*. Within the context of *“private and social interest diverges along the fine cocoa supply chain because it is assumed that “quality manipulation” can increase limited individual revenues but affect market opportunities at a national and local level”*, the specific research objectives were:

- i. To find out if the theory of collective action and social dilemmas can partially explain “quality manipulation” practices in the supply chain and its implications.
- ii. To design and justify the use of an experimental game confronting farmers in a “quality manipulation” social dilemma and evaluate possible enhancers of cooperation.

This section will re-examine the research objectives outlined above. First, a section reflecting on the research process that has been undertaken is included. Next, the findings are summarized in order to make conclusions based on them. Finally, the contribution of this research to the improvement of market opportunities for small farmers will be clarified. By adopting this structure it is intended that the research work will be concluded so as to reflect to which extent the objectives stated at the start have been met.

7.1 Research Objective 1: theory vs. practice

On one hand, the conceptual framework and information gathered from fine cocoa key actors served as a basis to better understand quality manipulation dynamics and implications in small farmers’ market opportunities, on the other hand, the literature identified the main points within the theories that help us to explain these dynamics and implications. As a result, it can be said that small farmers are facing a “quality manipulation” multiple-person social dilemma, since the individual rational decision of maximizing their individual profits leads to a collective irrationality where everybody is worst off in terms of access to a common market as a joint good.

However, the picture is still not completely clear. To which extent is this a social dilemma problem? According to the information collected from the interviews to a public server, in the last year the international complains have significantly decreased regarding to quality manipulation problems stemming from the fine cocoa beans deliveries. At the same time, it can be seen that most of the projects to eradicate this practice are mostly oriented to farmers' organizations - which represent only 10% of the producers – and traders. This fact leads to the question of whether the other of 90% of small farmers is facing a social dilemma?

There is no available data about the incidence of quality manipulation according to product origin. Considering that independent farmers' access market is mainly through the traditional supply chain which is long and where usually is not paid a differentiated price for quality; what would be the motivation for the independent farmer to manipulate or not the fine cocoa quality? Can it be considered a social dilemma?

To a certain extent, this problem could still be understood as a social dilemma, in the sense that if independent farmers start to cooperate in order excel for their impeccable quality, they could be better off through new specialized market opportunities. It is at this point where collective marketing initiatives can be also considered a form of collective action, which might be helpful in overcoming farmers' social dilemmas.

The literature and the information gathered in the interviews highlight some examples where some farmers' social dilemmas and other barriers have been successfully overcome through collective marketing initiatives. In the case of fine cocoa independent farmers, it is considered that collective marketing through voluntary organization could have significant effects. Why? Because farmers would have something to win and/or something to lose.

Even though it is important to recognize that a complete and strong organizational structure is needed to enhance commitment and prevent opportunistic behavior, there is scientific evidence that many variables such as the sense of group identity, group cohesion, reciprocity, reputation, communication among others, take place as key enhancers of cooperation. As a further step in this research, is the author's recommendation to study further the case of fine cocoa farmers' organizations, in order

to identify what has been the key factors in overcoming their social dilemmas and succeeding in accessing markets through specialized supply chains.

7.2 Research Objective 2: Experimental game

Following CHAMBERING'S (1948) reflection "*the real world of human beings...cannot be reproduced artificially and controlled*", the author recognized the methodological limitations of the proposed experiment. It is not the purpose of this experiment to reproduce the real forces influencing the decision making process among small farmers facing a quality manipulation dilemma in the fine cocoa supply chain. Their individual behavior might be influenced by a wide range of factors, from the intrinsic characteristics of the individual to the social, economic or ecologic surrounding environment.

Instead, the implementation of this methodology, which has contributed valuable information in other research fields such as natural resource management, is proposed as an exploratory and participatory tool. On one hand, it is considered "exploratory" in the sense that it can elucidate cause-effect information regarding "how" and "why" small farmers decide to manipulate fine cocoa quality and "what" incentives them to cooperate. On the other hand, it can be considered "participatory" in the sense that small farmers are tackling a practical problem of their daily life. Their participation in the experiment could represent an opportunity to analyze in a smaller scale, a problem that affects them collectively.

Based on the literature, academic discussion and experimental design, it can be drawn from this thesis work that experimental approaches have the potential to deeper evaluate farmers confronting a particular social dilemma within the supply chain and possible drivers for collective action. However, the presented trial design of a framed game and the short protocol for its implementations are considered as the initial of several steps for its further development, rather than a conclusive experience.

In order to improve and implement this experiment in field conditions, it is recommended to perform tests on lab conditions with students first, in order to identify unclear points. For its implementation on the field, it should be kept in mind the great importance of knowing in advance the target group characteristics and the location conditions. Levels of academic formation might be variable and basic among small farmers; therefore the use of more visual tools to carry out the experiments could be

needed. Careful planning of the activities is also important, paying attention to farmers' field work schedules, expected daily wages and family responsibilities.

7.3 Weaknesses of the study

There are some factors that may affect the results of this study. One of the most important is that the study was conducted by long distance of the stated problem location. Consequently, interviews were developed through telephone or internet. The lack of face to face communication might have created a sense of distrust and unreliability of the study and researcher from the interviewees perspective. In addition, it creates a barrier to gather in depth information of certain issues. It was the author's experience along this research, that farmers might not feel comfortable during telephonic/internet interviews for several reasons: (i) their atmosphere might provide several distractors that could lead to interruptions or to postpone the interview, (ii) farmers might not trust that the interview is done with research purposes, furthermore the interview might be cancelled or might limit their responses to vague answers and (iii) internet or telephone signal might be weak. Such constrains are not limited to farmers. Other actors might prefer anonymity or refuse participation, since the subject of quality manipulation is itself sensitive for the different supply chain actors. In regard to the first outcome, the sample did not include intermediaries and exporters due to such limitations.

On the other hand, the trial experiment design needs to be further explored and improved. According to the literature, several months are needed in order to design it, pre test it in lab conditions, make the necessary improvements and apply it on the field. Due to time and resources constrains, the scope of the trial experiment is limited. Furthermore, rather than conclusive, it is one of the few first steps in the applications of some learned lessons on economic experiments already explored in other research areas.

8 References

- A.V. Carron, W.N. Widmeyer, L.R. Brawley. (1995). The development of an instrument to assess cohesion in sports teams: the group environment questionnaire, *Journal of Sport Psychology* 4:244–266.
- Afoakwa, E. O., Paterson, A., Fowler, M., & Ryan, A. (2008). Flavor formation and character in cocoa and chocolate: a critical review. *Critical reviews in food science and nutrition*, 48(9), 840-57.
- Agrawal, A.. (2001). Common property institutions and sustainable governance of resources. *World Development* 29 (10), 1649–1672.
- Alfano G, Marwell G. (1980). Experiments on the provisions of public goods by groups. III. Nondivisibility and free riding in real groups. *Soc. Psychol. Q.* 43(3):300-9
- American, S., Review, S., Apr, N., & Heckathorn, D. D. (1996). The Dynamics and Dilemmas of Collective Action Author, 61(2), 250-277.
- Ashforth, E., & Mael, F. (1989). Social Identity Theory and the Organization. *The Academy of Management of Management*, 14(1), 20-39.
- Asociación Nacional de Exportadores de Cacao—ANECACAO (2006). *Manual del Cultivo del Cacao*.
- Bachmann, R. (2003). "Trust and power as means of co-ordinating the internal relations of the organization: a conceptual framework." *The trust process in organizations: Empirical studies of the determinants and the process of trust development*: 58-74.
- Bandiera, O., Barankay, I., & Rasul, I. (2005). Cooperation in collective action*. *The Economics of Transition*, 13(3), 473-498.
- Barham, J., & Chitemi, C. (2009). Collective action initiatives to improve marketing performance: Lessons from farmer groups in Tanzania. *Food Policy*, 34(1), 53-59.
- Bebbington, A. (1996). Organizations and Intensifications □: Campesino Federations , Rural Livelihoods and Agricultural Technology in the Andes and Amazonia. *Science*, 24(I), 1161-1177.

- Bellah, Robert, Richard Madsen, William M. Sullivan, Ann Swidler, and Steven Tipton. (1985). *Habits of the Heart: Individualism and Commitment in American Life*. Berkeley: University of California Press.
- Biénabe, E., & Sautier, D. (2004). The role of small scale producers' organizations to address market access. *Elements*, (33), 1-16.
- Biggam, J. (2008). *Succeeding with your Master's Dissertation*. Succeeding with your Master's Dissertation.
- Bio Trade Facilitation Program., BTFP. (2005). *Diagnóstico del Cacao Sabor Arriba* (pp. 3-52).
- Brañas- Garza, P. (2011). *Economía experimental y del comportamiento*.
- Bredahl, M.E., Northen, J.R., Boecker, A., Normile, M. (2001). Consumer demand sparks the growth of quality assurance schemes in the European food sector. *Changing Structure of Global Food Consumption and Trade/ WRS-01-1, Economic Research Service/ USDA*, pp. 90–102.
- Camerer, C. F. (2003). *Behavioral Game Theory. Experiments in Strategic Interaction*.
- Cardenas, J. C., Stranlund, J., & Willis, C. (2000). Local Environmental Control and Institutional Crowding-Out. *World Development*, 28(10), 1719-1733.
- Cardenas, Juan-camilo; Janssen, Marco & Bousquet, F. (1994). “ Dynamics of Rules and Resources: Three New Field Experiments on Water , Forests and Fisheries .”
- Chamberlin, E. H., Journal, T., & Apr, N. (1948). An Experimental Imperfect Market. *The journal of Political Economy*, 56(2), 95-108.
- Collinson, Ch. and M. Leon (2000). *Economic Viability of Ethical Cocoa Trading in Ecuador*. Report 2519, Natural Resources and Ethical Trade Programme, Natural Resources Institute, University of Greenwich, United Kingdom. Final Draft.
- Course, E. R. E., & Zikos, D. (2012). *Experimental Research in Social Sciences and Economics*.
- Cross J, Guyer M. (1980). *Social Traps*. Ann Arbor: Univ. Mich. Press

- Crouzillat, D., L. Bellanger, M. Rigoreau, P. Bucheli, and V. Pétiard (2000). Genetic Structure, Characterization and Selection of Nacional Cocoa Compared to Other Genetic Groups. Nestle Research Center, France.
- Dawes, R. M., Kragt, A. & Orbell, J. M. (1988). Not Me or Thee But We: The Importance of Group Identity In Eliciting Cooperation In Dilemma Situations: Experimental Manipulations. *Acta Psychologica*, 68, 83-97.
- Dawes, R.M. (1980). Social dilemmas. *Annual Review of Psychology* 31, 169-193.
- Devaux, A., Horton, D., Velasco, C., Thiele, G., López, G., Bernet, T., Reinoso, I., et al. (2009). Collective action for market chain innovation in the Andes. *Food Policy*, 34(1), 31-38.
- Donald, P. F. (2004). Biodiversity Impacts of Some Agricultural Commodity Production Systems. *Conservation Biology*, 18(1), 17-37.
- Donovan, J. (2006). Diversification in international cacao markets: opportunities and challenges for smallholder cacao enterprises in Central America. New York, 1-35. Retrieved from <http://ibcperu.org/doc/isis/9770.pdf>
- Doosje, B., Ellemers, N., & Spears, R. (1995). Perceived intragroup variability as a function of status and identification. *Journal of Experimental Social Psychology*, 31, 410–436.
- Experiments on Common Pool Resources: Innovative tools providing multi-dimensional insights. Experiments from three new EU Members States. (2010). *Governance An International Journal Of Policy And Administration*, 1-27.
- FAO. (1990). The community's toolbox: The idea, methods and tools for participatory assessment, monitoring and evaluation in community forestry. *Community Forestry Field Manuals*. Second version.
- Fink, Arlene (2003). *The survey handbook*. Thousand Oaks, CA: Sage.
- Flores, M. (2007). La proteccion juridica para el cacao fino y de aroma del Ecuador. *Serie Magister*, 76.
- Franzen, M., & Borgerhoff Mulder, M. (2007). Ecological, economic and social perspectives on cocoa production worldwide. *Biodiversity and Conservation*, 16(13), 3835-3849.

- Gaertner, S. L., Bachman, B. A., Dovidio, J., & Banker, B. S. (2001). Corporate mergers and stepfamily marriages: Identity, harmony, and commitment. In M. A. Hogg & D. J. Terry (Eds.), *Social identity processes in organizational context* (pp. 265–282). Philadelphia, PA: Psychology Press.
- Goodman P., Ravlin, E, Schminke, M. (1987). Understanding groups in organizations, *Research in Organizational Behavior* 9:121–173.
- Grover G, Jeong S.R., Segars. A.H. (1996). Information systems effectiveness: the construct space and patterns of application, *Information and Management* 31, 4:177–191.
- Hardin, G.R. (1968). The tragedy of the commons. *Science* 162, 1243-1248.
- Harrison, G. W., & List, J. A. (2012). Field Experiments. *Journal of Economic Literature*, 42(4), 1009-1055.
- Hinkle, S., Taylor, L., Fox-Cardamone, D. L., & Crook, K. (1989). Intragroup identification and intergroup differentiation: A multi-component approach. *British Journal of Social Psychology*, 28, 305–317.
- International Cocoa Organization (ICCO). (2005). *ICCO Annual Report 2003/2004*, London
- International Cocoa Organization (ICCO). (2005). Project to determine the physical, chemical and organoleptic parameters to differentiate between fine and bulk cocoa. Report EX/134/10
- Jano, P., & Mainville, D. (2007). *The Cacao Marketing Chain in Ecuador: Analysis of Chain Constraints to the Development of Markets for High-Quality Cacao Production*.
- Jansen, H. (2012). The Logic of Qualitative Survey Research and its Position in the Field of Social Research Methods. *Forum Qualitative Sozialforschung*, 11(2), 1-16.
- Kaganzi, E., Ferris, S., Barham, J., Abenakyo, A., Sanginga, P., & Njuki, J. (2009). Sustaining linkages to high value markets through collective action in Uganda. *Food Policy*, 34(1), 23-30.

- Kariuki, G., & Place, F. (2005). Initiatives for Rural Development through Collective Action: The Case Of Household Participation In Group Activities In The Highlands Of Central Kenya. Food Policy. Washington, D.C.
- Karp D, Jin N, Yamagishi T, Shinotsuka H. (1993). Raising the minimum in the minimal group paradigm. *Jpn. J. Exp. Soc. Psychol.* 32:231-40
- Klandermans, Bert.(1988). "Union Action and the Free-Rider Dilemma." Pp. 77-92 in *Research in Social Movements, Conflict and Change*, vol. 10, Social Movements as a Factor of Change in the Contemporary World, edited by L. Kriesberg and B. Misztal. Greenwich, CT: JAI Press.
- Kollock, P. (1998). SOCIAL DILEMMAS: The Anatomy of Cooperation. *Annual Review of Sociology*, 24, 183-214.
- Kramer, R. M. (1991). Intergroup relationships and organizational dilemmas: The role of categorization processes. In L. L. Cummings, & B. M. Staw (Eds.), *Research in organizational behavior* (pp. 191–228). Greenwich, CT: JAI Press.
- Kramer, R.M. and M.B. Brewer (1986). ‘Social group identity and the emergence of cooperation in resource conservation dilemmas’. In: H. Wilke, D. Messick and C. Rutte (eds.), *Experimental social dilemmas* Frankfurt am Main: Verlag Peter Lang. pp. 205-234.
- Krishna, A. 2001. Moving from the stock of social capital to the flow of benefits: The role of agency. *World Development* 29(6): 925-943.
- Kurasaki, K. S. (2000). Intercoder Reliability for Validating Conclusions Drawn from Open-Ended Interview Data. *Field Methods*, 12(3), 179-194.
- L. Thompson, L.J. Kray, E.A. Lind. (1998). Cohesion and respect: an examination of group decision making in social and escalation dilemmas, *Journal of Experimental Social Psychology* 34:289–311.
- Leana, C., & Van Buren, H. J. (1999). Organizational Social Capital and Employment Practices. *The Academy of Management Review*, 24(3), 538-555.
- Levitt, S. D., & List, J. A. (2007). What Do Laboratory Experiments Measuring Social Preferences Reveal About the Real World?, 21(2), 153-174.
- Lundy, M. (2007). New forms of collective action by small scale growers. Latin American Center for Rural Development (RIMISP), Santiago, CL, (c).

- Markelova, H., Meinzen-Dick, R., Hellin, J., & Dohrn, S. (2009). Collective action for smallholder market access. *Food Policy*, 34(1), 1-7.
- Marshall, Catherine and Rossman, Gretchen B. (1998). *Designing Qualitative Research*. Thousand Oaks, CA: Sage. ISBN 0-7619-1340-8
- Megyesi, B., Kelemen, E., & Schermer, M. (2010). Social Capital as a Success Factor for Collective Farmers Marketing Initiatives. *International Journal of Sociology of Agriculture and Food*, 18(1), 89-103.
- Messick DM, Wilke HAM, Brewer MB, Kra-mer RM, Zemke P, Lui L. (1983). Individual adaptations and structural change as solu-tions to social dilemmas. *J. Pers. Soc. Psy-chol.* 44:294-309
- Ministerio de Agricultura y Ganaderia. (2010). *Proyecto de Reactivacion del Cultivo de Cacao y Transformacion Primaria – Empresa Nacional de Cacaoe*.
- Morgan, R. M., Hunt, S. D., Morgan, R. M., & Hunt, S. D. (2012). The Commitment-TrustTheory of Relationship Marketing. *Journal of Marketing*, 58(3), 20-38.
- Narro, C., Roy, D., Okello, J., Avendaño, B., Rich, K., & Thorat, A. (2009). Public-private partnerships and collective action in high value fruit and vegetable supply chains. *Food Policy*, 34(1), 8-15.
- Olson, Mancur. (1965). *The logic of collective action: public goods and the theory of groups*. Vol. 124. Cambridge, Mass.: Harvard University Press.
- Ostrom, E. (1993). *Governing the Commons*: The Evolution of Institutions for Collective Action. *Journal of Economic Literature*, 31(1), 282-283.
- Ostrom, E., & Ahn, T. K. (2007). The Meaning of Social Capital and Its link to Collective Action. *Workshop in Political Theory and Policy Analysis*. Retrieved from
- Owen, William Foster. (1985). Metaphor Analysis of Cohesiveness in Small Discussion Groups. *Small Group Behavior* 16:415-24
- OXFAM. (2002). *The cocoa market – a background study* *. Policy (p. 32). Retrieved from <http://www.maketrade-fair.com/en/assets/english/CocoaStudy.pdf>.
- Panlibuton, H., & Meyer, M. (2004). *Value Chain Assessment*: Indonesia Cocoa. Current.

- Rasmussen, L. N. and Meinzen-Dick, R. (1995). "Local Organizations for Natural Resource Management: Lessons from Theoretical and Empirical Literature." EPTD (Environment and Production Technology Division, IFPRI) DISCUSSION PAPER No. 11: 40
- Rose-Anderssen, C., & Allen, P. M. (2008). Diversity and learning for innovation: dialogue for collaboration. *Journal of Management Development*, 27(3), 307-327.
- Shiferaw, B., Hellin, J., & Muricho, G. (2011). Improving market access and agricultural productivity growth in Africa: what role for producer organizations and collective action institutions? *Food Security*, 3(4), 475-489.
- Shih, Margaret, Todd L. Pittinsky, and Nalini Ambady. (1999). "Stereotype Susceptibility: Identity Salience and Shifts in Quantitative Performance." *Psychological Science*, 10(1): 80-83.
- Sonnemans, J., Schram, A., & Offerman, T. (1998). Public good provision and public bad prevention: The effect of framing. *Journal of Economic Behavior & Organization*, 34(1), 143-161.
- Tajfel, H. and J. Turner. (1979). 'An integrative theory of intergroup conflict'. In: W. Austin and S. Worchel (eds.), *The social psychology of intergroup relations*, Monterey, CA: Brooks/Cole. pp. 33-47.
- Tajfel, H., (1974). Social identity and intergroup behavior. *Social Science Information* 13, 65-93.
- Taylor, M., (1976). *Anarchy and cooperation*. London: Wiley.
- Tollens, E. F., & Gilbert, C. L. (2003). Does Market Liberalisation Jeopardise Export Quality? Cameroon Cocoa , 1988 – 2000. *Journal of African Economies*, 12(3), 1988-2000.
- Ton, G. (2008). "Challenges for smallholder market access: A review of literature on institutional arrangements in collective marketing." *Stewart Postharvest Review* 4(5).
- Ton, G. (2010). Resolving the Challenges of Collective Marketing: incentive structures that reduce the tensions between members and their group. *ESFIM Policy Brief #4*. Wageningen, ESFIM.

- Ton, G., Ansah, I. G. K., Ivanova, N., Gyeltshen, T., Kuijpers, R., & Mantziki, K. (2012). Resolving Tensions□: Assisting Farmer Organisations to cope with Opportunistic Behaviour.
- Ton, G., D. M. Opeero, et al. (2010). "How Do We Get it to the Mill?' A Study on Bulking Arrangements that Enable Sourcing from Smallholders in the Ugandan Vegetable Oil Chain." SSRN eLibrary.
- Wang, E. T. G., Ying, T.-C., Jiang, J. J., & Klein, G. (2006). Group cohesion in organizational innovation: An empirical examination of ERP implementation. *Information and Software Technology*, 48(4), 235-244.
- Yin, R. K. (2003). *Case Study Research: Design and Methods*, 3rd edn. Vol. 5, Thousand Oaks, CA: Sage Publications.
- Zdaniuk, B., & Levine, J. M. (2001). Group Loyalty: Impact of Members' Identification and Contributions. *Journal of Experimental Social Psychology*, 37(6), 502-509.
- Zdaniuk, B., & Levine, J. M. (2001). Group Loyalty: Impact of Members' Identification and Contributions. *Journal of Experimental Social Psychology*, 37(6), 502-509.

9 Annex

Annex 1 Areas where disintegrative tendencies in collective marketing are located

Areas of disintegrative tendencies	Description
‘Regulating Member Supply’	Tensions can emerge when individual members increase their supply to the marketing organization, and, doing so, negatively affect the possibilities of other members to supply.
‘Quality Assurance Systems’	When a deal is made, the quality that the organization has promised will have to be controlled for: individual members may tend to deposit lower quality and the organization needs a system to maintain minimum quality requirements.
‘Coping with Working Capital Constraints’	Many smallholder farmers tend to face cash constraints and ask for fast payment, while the organization needs time to finish transactions with the ultimate buyer.
‘Anticipating Side-Selling’	The organization might provide a credit service or advance payment system to enable production. However, there is a serious risk that farmers “side-sell” their product to competing traders or processors, to which they have no repayment obligation.
‘Ways to Dispose of Profits’	When the organization makes profit, the organization will tend to invest or increase capital reserves, while the member will have a tendency to prefer more short-term benefits, e.g. better prices.
‘Differentiating Services to Members and Non-Members’	Most economic organizations need contributions from members to realize their business opportunities. However, members face a number of disincentives to do so when benefits which flow from investment, accrue to investors and non-investors alike.
‘Decision Making on Activities that Benefit Only a Sub-group’	When the type of investment is not likely to benefit all members, investment decisions that seem economically optimal from the perspective of the management are not necessarily desirable from the standpoint of (sub-groups of) members.

Areas of disintegrative tendencies	Description
‘Task Delegation and Supervision of Professional Staff’	Member-based organizations elect persons to supervise and support the management. However, the limited technical knowledge of board members and the lack of transparency of information disclosed by the management often limit the effectiveness of this governing structure.
‘Disclosure of Market Information’	Investments in market intelligence become an asset for the bearers of it, usually the sales persons. The group has to decide on partial or full disclosure of market information, motivating group investment in market intelligence and preventing defection of personnel.
‘Liability in Contracts and Loans’	There is an inherent tension between members that want to limit their liability for group actions and the need of the group as a whole to generate as much collateral as possible. Organizations specify procedures for decision making when the board is contracting on behalf of the group.
‘Managing Political Aspirations’	Economic smallholders’ organizations tend to take up a broader representative role next to their economic service provisioning to members. Members delegate their political voice to the organization while the political representatives of the organization may never fully discuss all political decisions with them.

Source: Ton (2010)

Annex 2 Interviewees, communication channel and main topics of discussion

Type of actor	Name	Communication	Main topics of discussion
Farmers	Sr. Vitaliano Sarabia <i>Head of UNOCACE (farmer organization of second level)</i>	Via telephone	<ol style="list-style-type: none"> 1. General information 2. Could you tell me about the organization structure, functions, strengthens, members? 3. Why do you belong to the organization? 4. Please, tell me about the market opportunities of UNOCACE? 5. How does the group ensure good quality among members? 6. What are the futures expectative for the organization?
	Sra. Lourdes Cabeza <i>Independent farmer</i>	Via telephone	<ol style="list-style-type: none"> 1. General information 2. Which kind of cocoa do you have? 3. To whom do you sell it? 4. Do they require good fine cocoa? 5. Do they pay extra for its quality and purity? 6. How do they test the purity? 7. Why do you stay as independent farmer?
Public Servers	Public server 1 <i>Cocoa projects' collaborator</i>	Via Skype	<ol style="list-style-type: none"> 1. General information 2. Could you describe the current situation of the fine cocoa in the country? 3. What are the main constrains? 4. Is there available information about quality manipulation incidence according its local
	Public server 2 <i>Cocoa projects' collaborator</i>	Via Skype	

Type of actor	Name	Communication	Main topics of discussion
			<p>origin?</p> <ol style="list-style-type: none"> 5. Why ICCO imposed a sanction? 6. What are the current strategies for quality and market reputation improvement? 7. How price differentiation is working along the supply chain? 8. What is being done or in project to do in order to improve smallholders market opportunities?
Consultant	Econ. Jaime Gonzalo Fernando	Via Skype	<ol style="list-style-type: none"> 1. General information 2. Could you describe the current situation of the fine cocoa in the country? 3. What are the main constrains? 4. How quality manipulation practices operate within the supply chain? 5. Could you explain me in what consist the ICCO's sanction and how does it affect the small farmers? 6. What is being done or in project to do in order to improve local and national situation? 7. How these strategies are expected to work with organized farmers as well as independents?

Information gathered through the interviews is available by request to the author. In the next annex it can be find brief summary of an interview to a public server.

Annex 3 Fragments of an interview with a public server

R.: Please, could you tell me about how is the current situation of fine cocoa in Ecuador and about the ICCO's sanction?

P.S.: It is important to mention that for two years the "National Coordinator of Fine and Flavor Cocoa" has been trying to come together. It has clustered around 20% of producers and is working on creating a law for fine and flavor cocoa, and the government will decide whether or not a law is needed and its focus.

Since 2009 Ecuador declared the repositioning of fine and flavor cocoa "Arriba" as state policy basically to participate in the expert panel of fine and flavor cocoa from ICCO, held in September 2010. Ecuador had to prepare a lot to defend the country's position as there were many rumors that we would get a 40 or 30% recognition as a producer and exporter of fine and flavor cocoa, which would have been devastating for us because for the ICCO to give a certain qualification doesn't influence directly on the price, but it does on the prizes, this would have lead to a decrease in the selling price of cacao which would have affected producers.

We participated in the panel, a quite social exhibition where we managed to remain at 75%. It is noteworthy that the panel recognizes that Ecuador has made substantial progress in reducing cocoa mixtures of ordinary and fine and flavor cocoa. For us, this represents a significant advance because in the last panel of 2008 it was said that "Ecuador sold us a pig in a poke" they are liars and the market does not believe in Ecuador.

Now, we are not saying that we should get rid of CCN51 because it also has potential markets, and quite significant ones. However the government, especially the Ministry of Agriculture and Foreign Ministry said to be producing almost zero mixtures and that we are providing quality grain and therefore we should be recognized 100%, but that's not the logic. Among the commitments expressed to the ICCO we mentioned that Ecuador will substantially drop the mixture between varieties and will improve the whole cocoa chain, it is also a commitment we have made internationally. And also the biggest commitment that was made and that was fulfilled was to remove the certification and the ability to certify the quality of cocoa for export to Anecacao. That was one of the big problems and we were heavily criticized internationally, because Anecacao being the national association of exporters of cocoa (approximately two

years ago, they covered 70% cocoa exporters), were conglomerates and were responsible for certifying cocoa; so we were judge and jury "I'll export and I'll certify". So what was the guarantee that things were going well? Now, since September 10, I believe 2010, Agrocalidad has been doing this.

Agrocalidad is responsible for certifying cocoa. Since then, Ecuador has had no complaints from buyers about mixtures. Sometimes it's been said that there is no progress, but I tell you personally that I have seen progress, little progress but progress nonetheless. Like I say, what's most remarkable is that we have had no complaints from the European sector, which is basically where our fine cocoa goes, I think that is good.

What Agrocalidad wants to do is come up with a comprehensive traceability system; I mean in the whole chain, you know that this is difficult. I don't know how will they get to it. So what Agrocalidad wants to do is that the seed that you buy says "Cacao Arriba" you plant it as "Cacao Arriba" and it goes to the European customer as Cacao Arriba. The main problem there are the marketers, because they really the ones who mix.

These collection centers are also a big problem especially for AGROCALIDAD. Because they want to certificate starting from seed nurseries and have already begun to do it, so that your cocoa can be certified as Fine cocoa from the very beginning. AGROCALIDAD even wants to certify collection centers. But you always will need to have authorized operation and meet the requirements. They however do not want to get certified for obvious reasons.

Now...after the collection centers let's talk about the exporters. Now there are not so many complaints about the problem of mixtures (quality manipulation) because AGROCALIDAD is doing the control, so we have reduced somehow the problem, but as you may realize the control is being done in the last stage of the supply chain, it should not be so. It should be done from the beginning with the farmers. And this is one of the difficult parts where we could apply the origin denomination. If I am not wrong, in 2010 the origin denomination was accepted, but so far no producer has applied it. For you to apply this top origin denomination, you have to demonstrate that the cacao seed is "arriba" and until that happens...

R.: What has to be done by the farmer to apply for the denomination of origin of their cocoa? Is there a formal procedure?

P.S.: Yes, that is also a limitation. The producer has to pay to use an origin denomination since this belongs to the state, not to all, then you as a producer Julissa do not have to pay everything. Still, the remaining amount is expensive and farmers would not pay that. But you have to pay to get that piece of paper certifying that the denomination is “arriba” and that piece of paper that certifies it, ensures your entire chain. It's like any certification, you have to pay and at the end it will be a cost benefit relation, but it must be done.

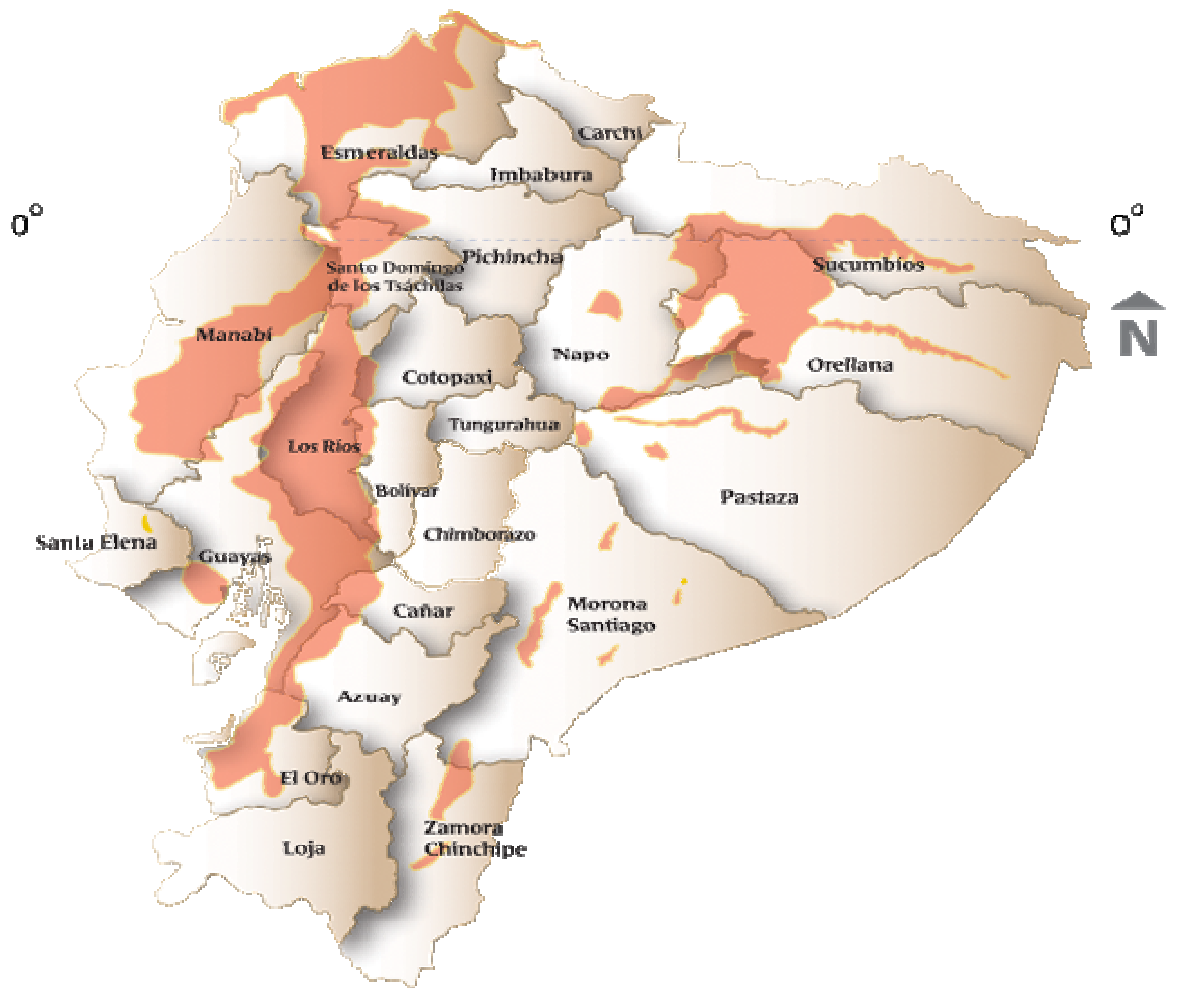
R.: How will the “origin denomination” be controlled?

P.S.: If you want to apply to the “origin denomination”, obviously there will be someone watching that you actually produce fine cocoa and export it as “arriba”. There is a regulatory board, the regulatory board is generally part of the government and private sector that will verify and watch everything you've done "in situ", from the nursery, to make sure you meet the specifications.

R.: Researcher

P.S.: Public Server

Annex 4 Location where fine cocoa is produced



Source: ANECACAO, provided by Econ. Jaime Gonzalo Fernando

**Annex 5 Extract of the experimental design of the public bad game designed by
Sonnemans et al (1998)**

The public bad game (*Sonnemans et al, 1998*):

- In each period you will choose between Yellow and Blue.
- The amount related to yellow is 60 cents; the amount related to Blue is 0.
- Choosing Yellow involves an immediate win of 60 cents.
- If you choose Blue, your choice-payoff will be equal to the GROUP-REVENUE.
- If you choose Yellow, your choice-payoff will be equal to the GROUP-REVENUE plus the 60 cents (related to the Yellow choice).
- Each group-member will get a payoff dependent on the number of Yellow choices in your group: the GROUP REVENUE.
- If fewer than 3 Yellow choices are made in the group, the 5 members receive 185 cents each.
- A repeated game design was applied in which subjects played in the same group for 20 rounds.

		Number of yellow choices in group					
		0	1	2	3	4	5
Group earnings		185	185	185	0	0	0
Amount connected with the yellow choice:		60 cents					
Amount connected with the blue choice:		0 cent					