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**Supermarket Supply Chain for Fresh Fruit and Vegetables:
Opportunities and Challenges for Small Farmers**

First-Phase Research Results¹

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¹ Preliminary results, posterior changes may be included. Please submit comments to jblandon@uoguelph.ca
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TABLE OF CONTENTS

1.	Introduction	2
1.1	New Institutional Economics	3
1.2	Methodology	4
1.3	Geographic Scope of the Study	4
2.	Overview of the Country and the FFV Sector	5
3.	Interview Findings	10
3.1	In-depth interviews	10
3.2	Advantages and Disadvantages of Each Marketing System	11
3.3	Key Success Factors and Limitations for Participating in Supermarket Supply Chain of FVV	14
3.4	Impacts on Farmer Livelihoods	18
3.5	Ways of Small-Farmer Participation in Supermarket Supply Chain of FVV	20
3.6	Opportunities and Threats Offered by the Growth of Supermarkets	22
4.	Discussion at the Light of the New Institutional Economics Framework	24
4.1	Transaction Costs	25
4.2	Collective Action	29
5.	Potential Mechanisms to Reduce Access Problems to the Supermarket Supply Chain of FVV	32
6.	Conclusions	35
	References	36

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1. Introduction

Concerned about the current changes in the agrifood systems in developed and developing countries, specifically the increasingly coordination in market transactions, and the opportunities and challenges that these changes represent for small farmers in developing countries this research project is currently underway with the following objective:

Apply the New Institutional Economics (NIE) framework to assess the level and form of small farmer participation in the supermarket supply chain (SSC) for fresh fruit and vegetables (FFV) in Honduras. Simultaneously, identify mechanisms through which access problems faced by small farmers can be alleviated to the betterment of their livelihoods.

More specifically the objectives are:

1. To assess the nature and level of transaction costs associated with the participation of small farmers in supermarket supply chains for FFV and identify potential mechanisms through which these can be reduced.
2. To identify the market opportunities and threats offered to small producers of FFV by the growth of supermarkets.
3. To identify the constraints and key success factors for small farmers to supply FFV to supermarkets.
4. To determine 'good practice' models for the promotion of small farmers as suppliers of FFV to supermarkets and other large buyers in contemporary supply chains.

1.1 New Institutional Economics

NIE has its origin in the works of Coase, North and Williamson and focuses on the role of institutions in economic transactions (Ménard, 2000). According to neoclassical economic theory, economic agents (farmers in this case) will coordinate their actions if the benefits of doing so outweigh the costs. However, in the real world this does not always happen regardless of the potential gains (Harris et al., 1998). One reason for such behavior is that whilst economic agents are inherently rational, limitations in information and frictions in trade hamper them in this pursuit, such that they are rationally-bounded (Harris et al., 1998; Williamson, 2000). Consistent with this, Coase (2000) emphasizes the importance of institutions [to facilitate coordination] and to lower the costs of economic transactions. For this reason, NIE attempts to incorporate the role of institutions and institutional arrangements in the coordination of the activities of economic players (Harris et al., 1998). Many authors have used the NIE approach to analyze the economic coordination activities of farmers and their implications for farmer organizations, networks and strategic alliances (Nabli and Nugent, 1989; Harris et al., 1998; Rehber, 2000; Sykuta and Cook, 2001).

Even though there is no consensus about what should be included under the umbrella of NIE, Nabli and Nugent (1989) consider that contractual uncertainty (transaction and information costs) and collective action are the salient points. Harris et al. (1998) sub-divide these points into contractual uncertainty (information costs and asymmetry, transaction costs and hold-up problems) and collective action (collective goods, common pool resources and free-ride problems). Given the origins and scope of NIE, it “represents the culminating intersection of a number of different lines of investigation,” crossing discipline boundaries and engendering interdisciplinary studies, “allowing the cross-fertilization and mutual stimulation among

historians, sociologist, political scientists, psychologists, lawyers, and of course, economists” (Nabli and Nugent, 1989, p. 1333).

1.2 Methodology

The methodology of the study has been split in two phases. The first phase was carried out during the period September-December 2004, and was mainly qualitative, consisting of in-depth interviews with different actors involved in the FFV sector, including government, private sector (for example supermarket chains, suppliers), non-governmental organizations (NGOs), farmer organizations, donors, universities and small farmers. The second phase will attempt to measure, quantitatively, variables that determine the participation of small farmers in new agrifood systems, specifically in the SSC for FFV. For this purpose, a survey including participant and non-participant farmers in the SSC for FFV will be carried out during the period April-June 2005.

1.3 Geographic Scope of the Study

For the demand side, the cities of Tegucigalpa and San Pedro Sula were chosen. These two cities are the most important cities in terms of population and economic activity. Tegucigalpa is the capital of the nation with a population of about a million of inhabitants (including the twin city of Comayagua). San Pedro Sula, with a population of about half million people, is called “the industrial capital” of the country for its manufacturing activity and strong economy compared with the rest of the cities. Very near San Pedro Sula there are other important urban centers such as Choloma and El Progreso with populations of over 100,000

people (Banco Central de Honduras, 2005). As the supply area for FFV three departments² were selected between these two cities, namely Intibuca, La Paz and Comayagua, plus the department of Francisco Morazan around Tegucigalpa. These four departments are among the main producers of FFV in the country (Secretaria de Agricultura y Ganaderia, 2005).

2. Overview of the Country and the FFV Sector

Honduras, located in Central America, is a low-middle income country. The annual per capita income in 2003 was US\$ 970 dollars. The contribution of agriculture to the Gross Domestic Product (GDP) in this year was 13.5 percent. From a total population of about seven million people, 46 percent lived in urban areas in 2003 (World Bank, 2005). The two main urban centers of the country are Tegucigalpa that is the capital city and San Pedro Sula that is the most industrialized city of the country. Their population is about one million and half million people respectively (Banco Central de Honduras, 2005).

Agriculture is very important to Honduran economy, as reflected by its contribution to the GDP. Besides traditional crops such a coffee, grains, banana, oilseeds and cocoa, FFV crops contribute significantly to agricultural GDP. In 2001 the vegetable and fruit contribution was of 3.7 and 2.3 percent respectively. The vegetable and fruit sectors include about 15,000 and 10,000 farmers respectively. Most of these farmers are small (less than one hectare), with the exception of exporting companies that have large farming areas (Secretaria de Agricultura y Ganaderia, 2005).

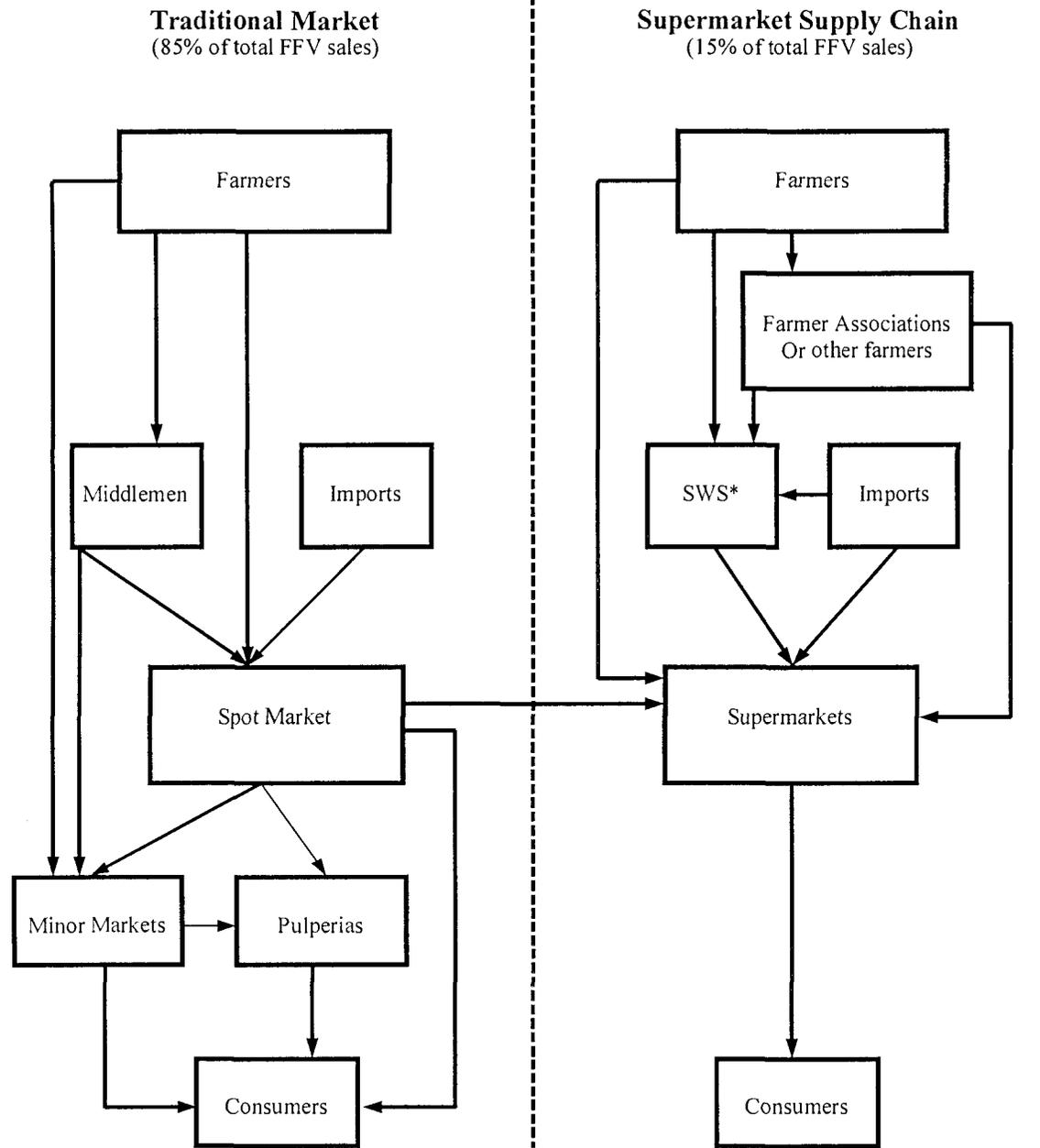
The trade balance of the FFV sector in Honduras is positive. Whilst its total exports in 2003 was more than US\$ 300 million dollars, imports were only about US\$ 50 millions (FAO, 2005), including processed products. Just the fresh fruit and vegetable imports together were

² Provinces or estates, geographically speaking.

about US\$ 20 million dollars in 2003 (Secretaria de Agricultura y Ganaderia, 2005) implying a great opportunity for import substitution. Among the best geographical areas for FFV production are the departments of Comayagua, Intibuca and La Paz, and surrounding areas of Tegucigalpa in the department of Francisco Morazan. The Choluteca-Valle region is of great importance as well, however, the production in this region is mainly in hands of large exporting companies (Secretaria de Agricultura y Ganaderia, 2005).

Most of the FFV used for local consumption in Honduras is channeled through traditional spot markets (SM) (Figure 1). According to recent studies (Berdague et al., 2003), supermarkets sell twelve percent of FFV consumed in Honduras, implying that the remaining of FFV consumed is sold through traditional markets. The most important SMs are located in Tegucigalpa and San Pedro Sula, however, in every town or city there is a local market. Farmers can have access to SM mainly in two ways. They can bring the produce from the farm to the market in own or rented transportation, or sell it at the farm gate to middlemen that go to farmer communities in their own transportation. In any case, the farmer is never sure about finding a buyer and about the price that he/she will get for his/her produce. Farmers are completely price takers. Recently, the government and some NGOs have promoted *ferias* (wet markets) where producers sell directly their products to consumers. These *ferias* operate just during the weekends, and mainly in Tegucigalpa and San Pedro Sula cities. However, there is the suspicion (according to interviews) that not all farmers can come to the market, and therefore, they sell their products in their communities to neighbor farmers who play the double role of farmers and middlemen.

Figure 1. Supply Chain of FFV in Honduras³



* Specialized wholesalers

Traditional Market Supply of FFV	
Farmers	30.00%
Middlemen	50.00%
Imports	20.00%
Total	100.00%

Supermarket Supply of FFV	
Farmers	10.00%
Specialized Wholesalers	50.00%
Imports	30.00%
Spot Market	10.00%
Total	100.00%

³ Market shares are 'good guesses' according to interviews and secondary data.

Supermarkets have become an alternative market for selling FFV (Figure 1). The main supermarket chains in Tegucigalpa are La Colonia, Paiz/Despenzas and Price Smart. La Colonia has twelve stores and is owned by local capital⁴. Paiz/Despenzas belong to the Corporación de Supermercados Unidos, which is a consortium of Central American supermarket chains. In Tegucigalpa there are four Paiz stores, which are focused on attending consumers with higher income while Despenzas are focused on consumers with lower income. The total number of Despenzas stores is fourteen and they are in other small cities, besides Tegucigalpa and San Pedro Sula. Price Smart, which is a multinational company based on the United States (US), has only one store in Tegucigalpa, and it focuses on high-income consumers that can pay membership. Price Smart also puts restrictions on the minimum quantity of product that a consumer can buy.

In San Pedro Sula there is a smaller number of supermarket stores. Paiz and Price Smart have only one store each. However, there are several local retail businesses with only one supermarket store each. These supermarkets are Los Andes, Junior⁵, El Colonial and La Económica. The first one is focused on consumers with higher income and the last three are focused on consumers with lower income. All supermarket stores in Tegucigalpa and San Pedro Sula have a section of FFV supplied with local and imported products.

Supermarkets procure their products in different ways. The Paiz/Despenzas chain has an exclusive supplier of FFV, which is Hortifruti. This supplier procures produce from farmers under contract farming scheme. When the local supply is not enough to meet supermarket demand, Hortifruti imports produce from Costa Rica, Nicaragua and/or Guatemala. Hortifruti has two main distribution centers, one in Tegucigalpa and one in San Pedro Sula, where

⁴ At the end of 2004 there were foreign investors interested in buying totally or partially this supermarket chain.

⁵ Planning to open a new big store soon.

producers makes their deliveries under a pre-established calendar. Hortifruti does not supply supermarket competence of Paiz/Despenzas.

La Colonia has its own distribution center in Tegucigalpa where producers deliver FFV based on contract farming scheme. La Colonia has its own pool of suppliers (individual farmers and specialized wholesalers⁶), however, it also buys from occasional farmers who show up to offer produce, wholesale markets and import market. The rest of supermarket chains and supermarket stores, mostly present in San Pedro Sula does not have direct arrangements with farmers, and procure their products from specialized wholesalers, occasional farmers, wholesale markets and imports. The most important cases of specialized suppliers identified in this study are Hortifruti, Evener, Provecar, Divefru, Zamorano, Aprofhi, Cohorsil and Funder. The first four operate with private capital, the next one belongs to the Escuela Agrícola El Zamorano and the last three operate with financial support of NGOs. Generally, there are only a small number of farmers supplying directly to supermarkets. Supermarkets are supplied mainly by specialized wholesalers, secondly by imports, and thirdly by individual farmers and SM. The majority of small farmers participate in the SSC through specialized wholesalers, farmer associations and even neighbor farmers that supply specialized wholesalers and/or supermarkets (Figure 1).

The local production of FFV in Honduras is not supplying all the local demand. Supermarkets import FFV for several reasons. First, to fill deficit caused by insufficient production. Second, to fill deficit caused by insufficient quality. Third, to guarantee consistent supply throughout the year. Fourth, to buy FFV not locally produced. The main foreign competition faced by FFV farmers in Honduras comes from Guatemala. This country has several advantages compared to Honduras. First, its FFV industry is more developed; second, its

⁶ Specialized wholesalers operate their own distribution centres and procure products usually under contract farming scheme.

climatic conditions allow production of a great variety of FFV; and third, the country exports the first quality product to developed countries, and the second quality product to Central American markets. For instance, during 2002 and 2003 about seventy percent of the quantity of FFV imported came from Guatemala (Table 1). Among the products coming from Guatemala are tomatoes, lettuce, carrots, broccoli and cauliflowers (SEPA/INFOAGRO, 2004).

Table 1. Honduras' Imports of FFV in Kilograms.

Origin	2002	2003
Guatemala	70,393,269.41	43,651,063.24
World	99,739,151.70	62,120,519.52
% Guatemala	70.58	70.27

Source: Servicio de Proteccion Agropecuaria, INFOAGRO

3. Interview Findings

3.1 *In-depth interviews*

As considered in the methodology, during the first phase of the research a number of in-depth interviews with institutions and organizations was conducted. Among the interviewees were people from the government, private sector, donors, local and international non-governmental organizations (NGOs), farmer organizations, and universities. In the same way, people from supermarket chains and suppliers were interviewed. A total of thirty in-depth interviews were conducted with organizations and institutions, thirty with small farmers that participate in the supply chain for supermarkets and thirty with small farmers that sell FFV on SM. Each interview lasted between one hour and one hour and a half, and in the case of farmers most of the interviews were conducted in their farms.

The original list of contacts was identified based on secondary information (internet) or recommended by the Asociación Nacional para el Fomento de la Agricultura Ecológica, ANAFAE (National Association for the Promotion of Ecologic Agriculture), which is the local

partner for this research. Afterward, people interviewed recommended other institutions and organizations that should participate in the study, including participant and non-participant farmers in the SSC for FFV.

3.2 Advantages and Disadvantages of Each Marketing System

Tables 2 and 3 summarize the advantages and disadvantages of the two markets considered in this study, specifically, SSC and SM.

Table 2. Advantages and Disadvantages of the Supermarket Supply Chain

Advantages	Disadvantages
<ul style="list-style-type: none"> ○ Guaranteed market for contracted products ○ Allows better planning (production and delivery) ○ Continuous and stable demand ○ Stable prices ○ Higher average prices ○ Payment mechanism allows savings/better financial management ○ Information about products demanded ○ Learning curve 	<ul style="list-style-type: none"> ○ Grades and standards required ○ Percentage of product rejected ○ Frequency and time of deliveries ○ Travel to deliver produce and collect receivables ○ Payment mechanism, specially at the beginning of the relationship ○ Better prices at the spot market (sometimes) ○ Risk of losing market share (total or partial) for lack of complying ○ Market power of buyers

Table 3. Advantages and Disadvantages of the Spot Market

Advantages	Disadvantages
<ul style="list-style-type: none"> ○ Little or no importance of grades and standards ○ Payment in cash and usually immediately ○ Possibility of selling at farm gate (if access to road exists) 	<ul style="list-style-type: none"> ○ Unstable prices ○ Unstable demand ○ Lower average prices ○ Lack of buyers at all (sometimes) ○ Almost impossible to forecast demand and prices ○ Lack of information

The traditional SM is highly uncertain. A farmer is never sure if he/she will find a buyer for his/her product, and what price he/she will get. Under a usually “informal” contract scheme (verbal) in the SSC, farmers guarantee a market for their products, provided that these meet

specific requirements set in the contract. This scheme allows farmers make a better planning of their production and marketing activities, such as dates of planting, harvesting, delivering, and even expecting cash flow. As supermarkets aim to offer a product all year around in order to satisfy consumer needs, farmers in the SSC enjoy a relatively continuous and stable demand of their products throughout the year, which allows them to keep permanent production, instead of seasonal production as farmers in SM traditionally do. This situation is an advantage for farmers, since it represents income for them during all months of the year, however, it can also be a disadvantage for those farmers who lack key assets for producing continuously, such as irrigation systems. Therefore, farmers relying on rainy seasons for producing, face a serious constraint to enter and/or stay in the SSC.

Prices in the SSC are characterized for being more stables, permitting farmers to forecast expected returns, which help them in their planning activities. Additionally, prices in the SSC are usually higher than average prices paid in the SM, resulting in better profit margins for farmers participating in the SSC. Prices in the SM may be higher during a short season in a year, motivating contracted farmers to divert produce to this market instead of delivering to the SSC as set in contracts. Nevertheless, senior farmers in the SSC recognize that these short-term benefits usually result in long-term losses if they lose, totally or partially, the guaranteed market in the SSC as a sanction imposed by buyers. Besides a temporarily higher price in the SM, farmers may be motivated to divert products to this market for obtaining immediate and cash payment. In the SSC farmers receive their payment one or two weeks after delivering produce and usually by check. Especially for farmers, who are new in the SSC this is a limitation because of their urgent need of operating capital. Nevertheless, when farmers are established in the SSC they do not consider this payment mechanism as a serious problem, since they have usually accumulated

financial resources and/or have developed better financial management skills. Even some farmers consider that this payment mechanism allows them to make savings, since they get the money of several deliveries together. Having a bigger amount of money, farmers are able to make more expensive investments.

In the SM it is not required an *ex-ante* or an *ex-post* relationship between buyer and seller. This lack of communication makes difficult the flow of information about product characteristics demanded in the market. In the SSC, on the contrary, farmers get feedback about the characteristics of their products as well as recommendations for production and post-harvesting activities, which permits them to improve quality and/or reduce unitary costs. In the SSC, senior farmers agree that the percentage of product rejected due to grades and standards is usually reduced throughout the years. The percentage of product rejected in the SSC is one of the main reasons that discourage farmers to enter and/or stay in this marketing system, since it has to be channeled to alternative markets where its price is typically low, and for some products there is not alternative market at all. New farmers can have even fifty percent of their production rejected due to low grades and standards. Successful farmers in the SSC, are not only able to reduce the percentage of product rejected, but also can be contracted in more exigent markets, such as those aimed to export. In this sense, the local SSC can be used as a school before thinking about more demanding markets.

The current requirements in the SSC in Honduras are mainly associated with periodic delivery (usually twice a week), quantity, appearance, size and lack of physical and pest damages. So far there is not a strict control about chemical inputs used in production, nevertheless, some buyers recommend ‘good agricultural and manufacturing practices,’ which imply the use of inputs and practices harmless to the environment and humans. It is noticeable

that the market power enjoyed by buyers gives them the privilege of setting requirements without much participation of suppliers. In the SM grades and standards are not important yet, all production can be bought without being graded, motivating farmers to sell in this market, especially those lacking information and capacity to meet the requirements of the SSC. The frequency required by the SSC to deliver produce and collect receivables is also disadvantageous for farmers with transport limitations. When farmers have access to roads, buyers operating in the SM (middlemen) show up in the communities to buy FFV production. Nevertheless, this market is very uncertain because of the lack of coordination between buyer and seller. As farmers do not have neither sufficient information about market prices nor bargaining power, they are completely price takers. Farmers believe, that middlemen always take advantage of farmers' situation and pay them unfair prices.

3.3 Key Success Factors and Limitations for Participating in Supermarket Supply Chain of FVV

There are several factors that determine success in the SSC (Table 4). While most of small farmers in the country have serious limitations to compete in new markets, some of them have something that differentiates them from the rest. This 'intangible' asset is associated with entrepreneurial and innovational strategies. Those farmers that are willing to change, have vision to foretell the opportunities of the market, and work hard have usually succeeded in the SSC. Participating in the SSC requires profound changes in the management of production activities. It requires the adoption of new technologies and market oriented practices. For selling in the SSC farmers have to be aware about market demand and requirements before planting. They have to choose specific varieties, use recommended inputs, and carefully

schedule their planting, harvesting and delivering activities. Farmers that sell in the SM plant when they can and what they can, hoping that somehow they will sell their production in the SM. These farmers usually find difficult to get attached to schedules and marketing commitments such as periodic delivery and grades and standards.

Table 4. Key Success Factors to Participate in the Supermarket Supply Chain

- | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">○ Entrepreneurship○ Innovation/Willing to change○ Market driven and technology led○ External assistance/start-up○ Technical and marketing information○ Collective action○ Loyalty/Reputation○ Access to land and water○ Specific assets (e.g., irrigation systems, greenhouses, post-harvest facilities, transportation)○ Public infrastructure (e.g., roads, electricity, telephone) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Even though entrepreneurship and innovation are key success factors for succeeding in the SSC, they are usually not endogenous processes, and instead they are generally promoted/supported by external agents such as NGOs, government and private institutions. When an external agent is present in a community farmers have to somehow participate in collective actions. Participation can go from being part of something informal such as small networks to something formal such as shareholder of collective enterprises. From about thirty farmers participating in the SSC interviewed, the majority of them consider that an external agent was determinant in his/her participation in the SSC. The start-up stimulus can be in the form of information, technical assistance or even private or collective investments needed in the production process. The time of companionship of external agents varies by case, but in most cases it is subject to the lifetime of particular programs or projects. There is not a general rule of

how much support or how long a farmer needs companionship to guarantee that his/her participation in the SSC is sustainable.

Once farmers start participating in the SSC some of them fail and have to exit. While some of them build a reputation and gain the trust of buyers, others try to cheat and play disloyally with buyers or partners of collective actions just for obtaining personal benefits. The most common disloyalties are associated with delivering - intentionally - bad quality products (e.g., try to cheat with quality) and diverting products to the SM instead of honoring contracts, because the average price in this market is temporarily higher. Successful participant farmers (in the SSC), interested in long-term relationships with their buyers, prefer to honor their contracts considering that in the long run they are better off, because of higher average prices in a year and continuous demand.

Even though a farmer may want to participate in the SSC some specific assets are essential for that. First is the access to land. The production of some FFV offers the advantage that they can be produced in small scale. Thus, with one hectare of good land (or even less) a farmer can perfectly participate in the SSC, as is the case of the majority of farmers interviewed in this research. Additionally, farmers must have access to water for irrigation to keep production all year around. Besides having access to land and water, farmers must have irrigation systems, preferably by drip irrigation because is more efficient. For a small farmer (e.g., one hectare), the investment required for a drip irrigation system is sometimes prohibited. Several small farmers have acquired it through donations or by subsidized credit channeled by NGOs or government agencies, but not through commercial banks. Besides irrigation, farmers usually need greenhouses, post-harvest facilities, distribution centers and transportation. Small farmers that have access to all of these assets by themselves are considered minority or are not

small farmers. For poorest farmers, collective action becomes determinant to facilitate small farmers the access to key assets. Rural development programs prefer to work with organized farmers, because some specific assets can be provided only for collective use (e.g., a greenhouse, a distribution center, transportation). Unfortunately, in the case of Honduras collective action is not easy to achieve. Farmers considering many unsuccessful experiences may prefer to work independently.

Besides having the minimum assets for producing at the farm level, the location of the farm and the access to public services is vital for success in the SSC. Access to roads, distance to the market, electricity and telephone services are of crucial importance. Farmers living in remote areas have problems to go to the market for delivering product or buying inputs. In the same way, most isolated farmers have less probabilities of accessing technical and marketing information.

Key success factors and limitations for participating in the SSC can also be seen in terms of entry and exit barriers. Key entry barriers are information, negotiation capacity and economic resources for doing specific investments needed to guarantee a continuous and reliable supply of FFV in the SSC. As already discussed, small farmers are overcoming these barriers with the assistance of external agents (public, private and NGOs), but still there are concerns about the sustainability of these actions. Furthermore, farmers face agro-ecological barriers associated with soil quality and climate conditions. These barriers are even more difficult to overcome, implying that new market opportunities are not for everybody. Farmers producing FFV in marginalized areas will not be able to enter the SSC, and therefore, other alternatives must be searched for them.

Once in the SSC, farmers also face barriers to exit. Important assets such as drip irrigation systems, greenhouses, cold storages, distribution centers and transportation may have low alternative uses out of the SSC for FFV or other coordinated market, forcing farmers to continue in business even if profits are very low. Some groups of farmers interviewed in this research, for example, are currently facing this problem. They acquired irrigation systems, greenhouses and distribution centers thanks to an enormous collective effort and support of external agents, to realize later that transportation cost to the market was prohibitive. Nevertheless, these farmers are still struggling to stay in business because the investments already made are not recoverable if they produce for the traditional SM. Similar situation are facing a number of farmers working individually.

3.4 Impacts on Farmer Livelihoods

Selling FFV in the SSC has many impacts on farmer livelihoods (Table 5). These impacts can be positive and negative. At least in the short run, it seems to be that the positive impacts outweigh the negative impacts. Most participant farmers interviewed conclude that even though they do not have a big bank account, they have been able to make investments in the farm, such as improvement of irrigation systems, acquisition of greenhouses or other important assets for producing FFV. In the same way, some successful farmers have been able to increase sales, introduce new products into the market or produce for other markets such as processors, fast food chains and even for exports. As farmers get more involved in the SSC they acquire new technical and managerial skills that allow them to increase productivity and quality and reduce costs.

Table 5. Positive and Negative Impacts of the Participation in the SSC

Positive Impacts	Negative Impacts
<ul style="list-style-type: none">○ Investments in the farm○ Business growth (e.g., increase sales, new products, new markets)○ Learning of better technologies○ Investment in education○ More and/or better food consumption○ Investment in family health○ Improving housing conditions○ Women participation and family integration	<ul style="list-style-type: none">○ Mono-crop culture○ Soil and water degradation○ Bad management of common pool resources (e.g., water)○ Social differentiation○ More consumption of alcohol

At the family level, the positive impacts are associated with investments in education, health, food consumption and improvement of housing conditions. Even though transactions at the market level are usually made by men, when farmers sell in the SSC women have a more active participation than when they sell in the SM. This situation may be explained by the fact that farmers that have been able to change and adopt new production and marketing systems are also more open minded and give more participation to women in the farming and household decisions. Successful farmers in the SSC typically do not have off-farm activities (e.g., leaving the home for long periods), which allow them to stay at home and have an integrated family.

Impacts on livelihoods and communities can also be negative. In some cases farmers are contracted just for supplying one single product, which induce mono-crop culture. Crop rotation is a very important practice for soil and pest management. Thus, the continuous production of a single crop in the same land, make this activity unsustainable in the long run. In the same way, water is not only a crucial resource used in FFV production, but also is shared for human consumption in rural communities. When water is taken from a stream, farmers that are located upstream have better chance of having access to water. If water is not enough for all farmers in the community, farmers that are located downstream may not have access to water.

Additionally, one requirement in the SSC is to deliver clean produce. Many farmers wash their products upstream contaminating downstream water.

At community level, farmers participating in the SSC are usually minority, which causes social differentiation in the community. Thus, non-participating farmers frequently feel jealous about a neighbor-farmer success. Or seen in the other way, a successful participant farmer may discriminate non-participant farmers, and avoid relationships with them. A negative impact on families may also come when farmers who have more disposable income spend more in entertaining activities such as drinking alcohol. Participant farmers, nevertheless, can make important contributions for encouraging non-participant farmers when they are appropriately involved in collective action in communities. They can share their experiences and present their farms as models for non-participant farmers willing to enter the SSC.

3.5 *Ways of Small-Farmer Participation in Supermarket Supply Chain for FFV*

There are different ways how a FFV product can go from the farm gate to the supermarket shelf (Table 6 and Figure 1). First, a small number of farmers supply directly to supermarket stores or to their distribution centers. These farmers usually have ‘well-developed’ managerial skills and important assets such as irrigation systems, greenhouses and own transportation. They see the farm as an enterprise, and for farming activities rely on hired labor. They have developed skills to understand market signals and negotiate directly with supermarket buyers. The area planted of these farmers can go from one to five hectares.

Table 6. Ways of Small-Farmer Participation in the Supermarket Supply Chain

- | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">○ Farmer => Supermarket (minority)○ Farmer => Specialized Wholesaler => Supermarket○ Farmer => Farmer Association => Specialized Wholesaler and/or Supermarket○ Farmer => Farmer => Specialized Wholesaler and/or Supermarket |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Second, there are farmers that sell to a specialized wholesaler, which supply supermarkets. These farmers are almost similar to the previous ones, but lack a physical key asset, are too small or lack managerial skills to negotiate directly with supermarkets. In this case the specialized wholesaler plays a key role to guide/support farmers about producing, post-harvesting and delivering activities. As these farmers are less reliable than the first ones, specialized wholesalers must have alternative plans to comply with supermarket demand when one of these farmers fail to deliver. Specialized wholesaler can buy produce to occasional farmers or in the SM and make their own selection and packing to deliver to supermarkets.

Third, there are farmers that sell to a farmer association or collective enterprise, which can sell to a specialized wholesaler and/or to a supermarket. These is the case of smaller farmers that can produce FFV but have serious constraints to enter the SSC by themselves, and therefore rely on collective actions to overcome these constraints. These farmers typically receive substantial support from development organizations such as NGOs or government programs. The support can go from technical assistance to subsidies or donations to acquire individual assets such as irrigation systems and/or collective assets such as distribution centers with cold storage and transportation to deliver produce to supermarkets. Furthermore, collective enterprises usually receive financial support to cover administrative costs. Most local and international NGOs are focused on this kind of farmers. A 'conventional' cost benefit analysis of these projects is difficult to do for several reasons, but a crucial one is the lack of consistent data. Additionally, due to the lack of coordination among NGOs and government programs farmers usually receive support from different sources. At family level, participant farmers in these projects are typically better off, but there are serious concerns about the sustainability of their projects if the external support is ended.

Finally, there are farmers that are not necessarily involved in community collective actions, but are associated with other farmers, especially from the first or second group. These farmers operate as satellites of the farmers that directly participate in the SSC. In order to guarantee enough quantity of produce, participant farmers make production arrangements with smaller farmers in their communities under the sharecropping system. Generally farmers receive in kind credit in the form of inputs (e.g., seeds, fertilizers, pesticides). In some cases the participant farmer also channels the smaller farmer produce into the SSC, but in other cases the smaller farmer is free to sell his/her produce in the SM. Therefore, the net benefit of these arrangements is very variable, since it can go from a strategic alliance where both farmers are equitably benefited to a traditional sharecropping arrangement where the participant farmer in the SSC makes the rules of the game according to his/her better convenience.

3.6 Opportunities and Threats Offered by the Growth of Supermarkets

The impact of supermarket growth in Honduras may not be seen as very important due to the limited participation of small farmers in this market, and the limited market share of supermarkets of the total FFV market in the country, however, this share may reach up to US\$42 million dollars⁷. This market opportunity, however, is not entirely taken for local producers, since supermarkets in Honduras export a considerable quantity of FFV that may be produced in the country⁸. Furthermore, the positive trend of supermarkets continues, and it is gradually impacting the consumer behavior in urban centers. Problems associated with the SM motivate people to go to supermarkets. Even though Honduras people are very price sensitive when they

⁷ Assuming Berdagué et al., 2003' estimates, that in Central America about 40% of per capita income is spent of food consumption, and from this value 10% is spent on FFV. In the same way, it is assumed that supermarkets control 15% of the total FFV market.

⁸ See SEPA/INFOAGRO, 2004, and CONTRADE (<http://unstats.un.org/unsd/comtrade/>).

buy FFV, issues such as hygiene, convenience and personal safety are motivating them to switch to supermarkets.

More than a market opportunity *per se*, local supermarkets can serve as schools where farmers can learn about new agrifood system requirements and its *modus operandi*. A farmer that can satisfy local supermarket requirements can easily enter other demanding markets such as fast food chains, food processors and exporters, as is the case of many participant farmers in the SSC in Honduras. Every time local and international grades and standards are becoming more similar, since supermarkets, even in Honduras are highly influenced by multinational retailers that have their own stores in the country (e.g., Price Smart) or have shares in the local supermarket chains (e.g., Selectos). Other retail companies operate regionally (Central America), facilitating the flow of FFV within the region (e.g., CSU). Therefore, the market opportunity is not just the nearest supermarket store, but also other local, regional or international businesses.

The most serious threat that supermarket growth represents to small farmers is that new agrifood systems are eroding the market share of traditional SM, where small farmers sell their products. Small farmers already consider the SM of FFV very uncertain and unprofitable, and with current changes it can become more uncertain or even demanding as it adjusts its *modus operandi* to respond to agrifood system changes and compete with retailers. In the same way, is expected that free trade agreements (e.g., the Central American Free Trade Agreement with the United States) will bring more challenges to local farmers in Honduras as new agribusiness operating in the country demand international grades and standards.

4. Discussion at the Light of the New Institutional Economics Framework

Taking as a fact that agrifood systems are changing due to different driving factors, it seems appropriate to think about what changes farmers have to do in order to compete in the new systems. The main driving factors behind changes in agrifood systems include agro-industrialization, globalization, changes in technology, trade liberalization, structural adjustment programs, reductions in government support to farmers, new consumer demands for terms of quality, safety and convenience and environmental concerns (Saxowsky and Duncan, 1998; Brester and Penn, 1999; Reardon and Barrett, 2000; Pinstруп-Andersen, 2002; Sheldon and McCorrison, 2003).

As Reardon and Barrett (2000, p. 195) emphasize, “an increasingly integrated global economy causes established agribusiness firms [in developed countries] to look increasingly to foreign suppliers and customers in order to improve profitability.” As a result, new forms of coordination have emerged (Peterson et al., 2001). As an example, Watts (1994, p. 248) describes the rise of contract farming in Africa and elsewhere as “one manifestation of the late twentieth-century restructuring of agriculture that can be fully comprehended as a global phenomenon.” Reardon and Barrett (2000) consider the rise of contractual exchange, which has largely replaced SM transactions, as the most prominent and widespread change in the agrifood systems of developing countries.

The supermarket case in Honduras is one typical example of how agrifood systems are changing and impacting farmers in developing countries. The findings in this research suggest that the majority of small farmers that have entered the SSC are better off now than before, when they used to sell their products just in the SM. However, in spite of the apparent benefits of the SSC, domestic farmers cannot entirely supply the demand of local supermarket chains, and

therefore, a great value of FFV is imported. Using NIE variables it will be tried to explain the reasons why domestic farmers cannot fully exploit this market opportunity.

4.1 Transaction Costs

Economic agents try to minimize the transaction costs associated with uncertainty, frequency of transactions and asset specificity (Saussier, 2000). If transaction costs are too high, the transaction does never occur. It is expected that the market preference (SSC or SM) of small farmers is a function of positive transaction costs. Table 7 presents proxy variables of these transaction costs associated with FFV farmers in Honduras.

4.1.1 Contractual uncertainty

Contractual uncertainty is usually derived by the incompleteness of contracts given imperfect information, which can lead to opportunism of one of the parties to an agreement. Small farmers in Honduras know that the SM of FFV is very uncertain in terms of finding a buyer at the harvesting time, and in terms of the prices they will get. However, this is the traditional way of marketing FFV in the country, and consequently farmers consider it as an obligatory risk. Alternative ways of marketing FFV, such as those offered by the SSC under contractual scheme are unknown by most of small farmers. They usually have low level of education (maximum six years of formal school), live in isolated communities with little access to technical and marketing information, and furthermore are too small to negotiate with large buyers that have market and information power (asymmetry). Buyers, in the same way, try to minimize risk and transaction costs associated with negotiating with a large number of small and unreliable farmers, therefore, prefer specialized wholesalers, which can be local or from other

countries. The development of a truthful relationship between buyers and sellers can reduce transaction costs associated with contractual uncertainty.

Table 7. Transaction Cost Associated with the Participation of Small Farmers in the Supermarket Supply Chain

No.	Transaction Costs		
	Uncertainty	Asset Specificity*	Frequency
1	Output risk	Irrigation	Months of growing
2	Quality risk	Greenhouse	Freq. of delivery
3	Information	Cold storage	Products demanded
4	Payment mechanism	Transportation	
5	Price variability	Access to public services	
6	Trust (buyer/seller)	Other cash crops	
7	Grading	Off-farm income	
9		Labour	
10		Credit	

* Some assets may not fit into the definition of asset specificity, but still are important in production and marketing of FFV

In most cases, participant farmers interviewed coincide that they have been ‘very lucky’ of having been connected to the SSC by an external agent. Generally this agent not only provides the information that farmers need to participate in the SSC, but also acts on behalf of them in negotiations with buyers. Agents that are usually representing NGOs, government programs or larger farmers have better chance of being listened/trusted by buyers, and consequently the arrangement is made. However, a sustainable participation in the SSC is not always guaranteed given the high dependency of farmers on external agents. At the beginning of projects, farmers are trained in production and marketing issues, but later the assistance is reduced under the assumption that farmers are ready to continue without companionship, however, farmers have serious limitations to update information. Unfortunately, there are not general rules to know when the local capacity is built.

Uncertainty of farmers is also associated with climatic conditions and pest damages. Being afraid that these conditions may affect the quantity and quality of production, some farmers prefer to stay away of commitments with the SSC. They already know that somehow they can still sell their production in the SM, even if the quantity and quality is not as expected. However, in the SSC products that do not meet the requirements are no accepted at all, and therefore, hold-up problems arise, especially for those products that are not demanded in the SM. When farmers are not very clear about grades and standards due to imperfect information they incur in transportation costs to deliver produce to distribution centers, just to realize that their products are rejected. At this moment they blame buyers, when the real responsible for this situation is the lack of information about the rules of the game in the SSC.

Price variability and payment mechanisms also bring uncertainty to farmers. In the SSC prices tend to be more stable than in the SM, but its payment mechanism is more uncertain given that farmers are paid several days after delivering produce and by cheque. Collecting receivables and doing bank transactions are costly and risky for small farmers, since they have to travel to cities. Receiving immediate and cash payment motivates farmers to sell at the farm gate to middlemen.

4.1.2 Asset specificity

Transaction costs take into account the issue of asset specificity, which deals with the degree to which a particular asset can be redeployed to alternative uses. When transactions involve assets with high specificity the party that made the investment faces the risk that the other party behaves in an opportunistic way. This occurs because it knows that the investor is tied to the agreement through the limited alternative uses of its assets (Harris et al., 1998). For

instance, in the production of FFV, farmers need to make investments in greenhouses, cold storages, transportation and irrigation systems that are not required in the production of traditional crops (e.g., grains) or are not vital for producing FFV for supplying the SM. The lack of these specific assets impedes small farmers to comply with quantity, quality and frequency requirements demanded in the SSC, however, once investments in these assets are made they may turn into exit barriers.

There are other assets that may not fit into the definition of asset specificity, however they are of great importance for participating in the SSC for FFV (Table 7). In the case of small farmers from Honduras, most of them face the lack of financial resources to invest in these assets. Small farmers do not have access to commercial credit. They can have access (sometimes) just to micro-credit organizations, typically supported by development programs.

Important assets may not be only physical, but they can also be human assets such as level of education, availability of labor, access to key information and particular skills in the FFV production gained through experience. Other assets such as off-farm income, cattle and other cash crops such as coffee can influence positively the participation of small farmers in new marketing systems, because they represent resources for investing in FFV production.

4.1.3 Frequency

Transactions costs are also affected by the frequency that transactions occur. When transactions are frequent it is better for parties to coordinate relationships and establish governance structures. Typically, supermarkets demand deliveries twice a week. Therefore, in order to guarantee quantity and quality they prefer specialized wholesalers instead of occasional farmers or the SM. Traditional farmers of FFV in Honduras are not used to planning their

production in such a way that allows them to harvest twice a week. Even if farmers realize that this is a necessary condition to enter the SSC, they still face several limitations to do that such as specific assets, inputs, agro-ecological conditions suitable for continuous FFV production and access to irrigation. For one single farmer, keeping a frequent and diverse production of FFV, as it is required by the SSC is not easy. One way that farmers can cope with this situation is pooling production from several small farmers to guarantee diverse and periodic deliveries, however, this also represents organization risks and costs.

4.2 *Collective Action*

According to NIE the presence of positive transaction costs may prevent an economic transaction in spite of potential gains. In the previous section was discussed how high transaction costs hamper small farmer participation in the SSC in Honduras or fully exploit the market opportunities offered by the growth supermarkets. In the same way, NIE emphasizes the role of institutions to lower transaction costs and make possible economic transactions. Institutions, which are defined as “the rules of the game” require the participation of people to be made. According to North (1995, p. 23) institutions are “the rules of the game of a society, or more formally, are the humanly devised constraints that structure human interaction. They are composed of formal rules, informal constraints, and the enforcement characteristics of both.” Organizations are “the players [of the game]: groups of individuals bound by a common purpose to achieve objectives. They include political bodies [e.g., political parties]; economic bodies [e.g., firms]; social bodies [e.g., associations]; and educational bodies [schools]” (North, 1995, p. 23). The key role of organizations is that they “could make numbers count as they could not when un-aggregated, that is, unorganized” (Esman and Uphoff, 1984, p. 54).

In the case of participant farmers in the SSC, the majority of them reveal that the support of an external agent was decisive for them to enter in this business. The way that farmers have become aware of the SSC and motivated to participate on it varies case by case. In some cases was through the participation in informal networks (e.g., relatives, friends, neighbors), the visit of private buyers or through development project agents. The poorest farmers need more external support and depend on donations or subsidies to acquire key assets and technical and market information. More endowed farmers that have private resources to buy key assets, still receive technical assistance from NGOs or government agencies and consider it vital, to enter/stay in the SSC. To get this support, in one way or another farmers needs to get involved in some sort of collective action.

In spite of the influence of collective action to enter the SSC, the number of cases of participant farmers in the SSC in Honduras is still quite limited. Furthermore, there are serious concerns about the sustainability of these cases if the external support is ended. The salient cases in the geographic area studied supported by government agencies and NGOs/Donors are still highly dependent on external assistance. Private initiatives and satellite farms have not reached an economic sustainability either. The farmers that are supplying individually to important buyers such as Hortifruti, La Colonia and Evezezer, even considered small, are generally those with better resources and managerial skills, and therefore have better chance to stay in the SSC, however, they still have serious constraints such as lack of credit and technical assistance.

How can small farmers get more involved in collective action and/or improve the efficiency of their current enterprises? Most of farmers interviewed consider that rural people from Honduras are reluctant to participate in collective action because they do not really trust in expected outcomes or are afraid of potential opportunism and free-riding problems associated

with these kinds of actions. Other problem commonly mentioned is the failure of previous initiatives. Thus, the promotion/existence of collective actions in rural communities to connect farmers with the SSC, may be seem as a necessary condition, but not as a sufficient condition given that some farmers are not willing to participate or fully cooperate in these actions or the collective action initiatives are not appropriate enough to guarantee success and sustainability.

Here is where the NIE framework has some weaknesses, while it emphasizes the role of institutions to lower transaction costs, the creation and functioning of these institutions is not an easy process. Bardhan (1989) emphasizes on the high propensity of opportunism and free-riding problems in collective action that may limit the development of institutions to bring common benefits. In the same way, he mentions the problems of unbalanced power among agents that NIE seems to ignore in the development of institutions. Bates (1995, p. 42) criticizes that NIE has been “slow to acknowledge that the creation of economics institutions takes places not on the ‘level playing field’ of the market but rather within the political arena, in which some are endowed with greater power than others.” In the case of Honduras, the heterogeneity of farmers is obvious, even when the majority of them can be considered smallholders. Distance to distribution centers, distance from the farm to the road, level of education, access to key assets, and natural leadership/entrepreneurship mark differentiation among farmers. The usually top-down strategies of development programs facilitate that the opinion of the most marginalized farmers is not always listened, and therefore, discourage them to participate.

5. Potential Mechanisms to Reduce Access Problems to the Supermarket Supply Chain of FFV

In the section 3.5 was presented the different ways that farmers participate in the SSC, therefore, different mechanisms should be proposed to reduce access problems faced by farmers, taking into consideration the different ways they participate. When asking interviewees their opinion about coordination among different players⁹ involved the FFV sector, the answer is that coordination is very low. By the end of 2002 started the ‘fruit and vegetable tables,’ supported by the government and donors, under a program called PRO-MESAS. In the case of FFV the main goal of these tables is to evaluate and design policies for the betterment of the sector. The objective of these tables can be seen as an appropriate mechanism to improve market access to farmers. However, most of farmers interviewed did not know about these tables, and at the institutional level most of the interviewees considered that the performance of these tables should be reviewed and improved¹⁰.

The main advantages that the SSC offers to farmers is a guaranteed market with relatively stable and better average prices, under a contractual arrangement. Nevertheless, supermarkets by themselves, with very few exceptions, do not offer other significant benefits or incentives to farmers, such as credit, inputs and technical assistance. Participant farmers that have access to these benefits/services get them through NGOs, governmental agencies or private input suppliers. As a strategy to have a reliable local supply of FFV, supermarkets should consider some ways of assistance or incentive to farmers. A reliable local supply can help supermarkets reduce the transaction costs associated with importing or buying at the SM when local supply fails to satisfy their demand.

⁹ Government, Donors, NGOs and Private sector

¹⁰ The Coordinators of these tables were not interviewed in this research.

Successful participant farmers in the SSC can make significant contribution to incorporate new farmers to the market. The satellite farming scheme, used by some participant farmers under sharecropping arrangements can be enhanced to bring more benefits to satellite farmers. NGOs and governmental agencies working with small farmers should target successful participant farmers to coordinate activities in favor of satellite farmers. As mentioned earlier in the paper, some satellite farmers are receiving an equitable treatment by participant farmers and have been integrated into the SSC. In other cases, satellite farmers are not integrated and must sell their production share in the SM.

For poorest small farmers collective action is the only way they can deal with transaction costs and participate in the SSC. Nevertheless, when engaged in collective action, agents sometimes behave in a way that does not necessarily lead to the benefit of collective interests (Harris et al., 1998). Opportunistic behavior that tries to improve one's own welfare at the expense of others may vary from "inconsequential, perhaps unconscious shirking, to a carefully calculated effort to defraud others with one is engaged in ongoing relationships" (Ostrom et al., 1993, p. 46). It is considered that the most apparent successful cases found in this research have not reached sustainability since farmers still need external resources and managerial assistance. In the same way, they need to foster their capacity to manage the commons and avoid opportunism and free-riding problems. Organizations supporting these collective efforts should focus on helping farmers design the 'rules of the game' of their collective activities and implement them. Ostrom (1990) proposes several mechanisms to govern the commons even under uncertain and complex conditions. She recommends to: 1) define boundaries clearly; 2) promote congruence between appropriation and provision rules; 3) establish collective-choice arrangements; 4) establish monitoring policies; 5) establish graduated penalties; 6) establish

conflict-resolution mechanisms; 7) recognize the right to organize; and 8) establish nested enterprises.

There are several NGOs and government agencies that seeing the apparent success of the few cases of collective action in the SSC want to replicate them without having built the social capital needed for undertaking these enterprises. Agencies trying to help small farmers to enter in the SSC should foster their inter-institutional relations to learn experiences and avoid unnecessary mistakes. In the same way, these agencies should establish strategic alliances with those organizations, individual farmers or private businesses that already have the know-how.

All initiatives to enter in the SSC should be ‘market driven and technology led.’ Strategic alliances between supermarkets and suppliers can help increase demand of FFV. Promotion, advertising, packing, and differentiation of products by brand and labels can contribute to this end. Entering into a supermarket store in Honduras can be seen the remarkable difference between imported and national products just based on marketing and value-added strategies.

Finally, individual participant farmers or collective farmer enterprises selling in the SSC should focus on diversifying their client base and design strategies to cope with limited supermarket demand, and at the same time take other potential market opportunities such as fast food chains, processors, exporters and even the SM for those products of lower quality. Supplying just to supermarkets may be a big risk for farmers, since they can lose partially or totally their market share when for whatever reason fail to comply with pre-established demand. It is known that supermarkets use this mechanism as a sanction for unreliable suppliers.

In order to assess other potential mechanisms for reducing small-farmer participation in SSC a survey with participant and not participant farmers will be carried out. Besides asking

farmers about their farming and marketing activities, they will be proposed several market scenarios. Farmers will answer about the probabilities of participating in each one. This experiment will allow determine the effect of specific variables in farmers' choice of market channels. Furthermore, a market segmentation of farmers will be estimated in order to propose different mechanisms according to farmer segments.

6. Conclusions

First, the results reveal that important transaction and information costs prevent the direct participation of less endowed farmers in the SSC for FFV. Among these limitations are lack of resources for making specific investments (e.g., irrigation systems, greenhouses, post-harvest facilities and transportation) and lack of access to accurate technical and market information. The latter is vital for making managerial decisions needed to comply with new market requirements (e.g., quality, quantity, frequency and safety) and for assessing the importance of coordination and development of long-term relationships with buyers compared with the short-term relationships associated with SM.

Second, small farmer participation in collective actions such as collective enterprises or alliances with more endowed farmers allow the smallest producers to actively participate in the SSC for FFV. Nevertheless, most of these initiatives are promoted and supported by external agents, such as NGOs or government projects, often with a limited time frame, raising questions about their sustainability. As a response, a number of potential mechanisms to reduce small farmer participation in the SSC for FFV have been presented here, and other ones will be assessed in the second part of this research.

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