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HORTIFRUTI IN CENTRAL AMERICA:

A CASE STUDY ABOUT THE INFLUENCE OF SUPERMARKETS ON THE DEVELOPMENT AND EVOLUTION OF CREDITWORTHINESS AMONG SMALL AND MEDIUM AGRICULTURAL PRODUCERS

microREPORT #57

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The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

FOREWORD

The current document was prepared under the Accelerated Microenterprise Advancement Project (AMAP) of the USAID's Microenterprise Development Office, as part of the **Rural and Agricultural Finance Initiative** (RAFI), a joint effort of the Office of Agriculture and the Microenterprise Development Office. Claudio Gonzalez-Vega is Professor of Agricultural, Environmental and Development Economics, Professor of Economics, and Director of the Rural Finance Program at The Ohio State University (OSU). At the time of the field research, Geoffrey Chalmers was in the Microenterprise Development Office at USAID. He is currently USAID's Financial Markets Advisor in Mexico. Rodolfo Quirós is an independent consultant and Senior Researcher at Academia de Centroamérica, in Costa Rica. Then, Jorge Rodríguez-Meza was Senior Research Associate at OSU. He is currently with The World Bank. A subcontract with Development Alternatives Inc. (DAI), under the AMAP initiative, funded the OSU research that generated the results reported here.

All four researchers visited the Hortifruti headquarters in San Jose in November of 2004, to interact with several officials, from the top management of the corporation to agronomists/buying agents. The researchers also interviewed representatives of Banco de San Jose and several financial institutions where the participating farmers usually borrow, in the three countries. Questionnaires for producer interviews were tested in a few locations (around Cartago and Heredia, in the Central Valley of Costa Rica). The subsequent field work, including producer interviews with a sample of participants and with financial intermediaries, was implemented by Quirós in Costa Rica, Chalmers and Rodríguez-Meza in Nicaragua, and Rodríguez-Meza in Honduras, in early 2005.

The authors are especially grateful for the ample collaboration offered by Hortifruti and related enterprises within the *Corporación de Compañías Agroindustriales* (CCA), at all levels, in particular for the support of Javier Gallegos, Jorge Cavallini, Rodrigo Sánchez, Armando González, José A. Jiménez, José Ruzicka and Jorge López – and their staff – and for the help of the buying officers who accompanied the researchers into the field. The authors are also grateful with the numerous farmers interviewed about their experience and with the representatives of other supermarket chains and of financial intermediaries who provided information and offered their perspective. Finally, the authors are grateful with the USAID Missions in Managua and Tegucigalpa, for their support, and with the RAFI team in Washington, D.C. and participants in the OSU brown bag seminar in Columbus, Ohio, for their comments on the design and preliminary results of the study. Additional comments were received from Elizabeth Dunn and participants in the VIII Inter-American Forum on Microenterprise, in Santa Cruz, Bolivia, and participants in the Seminar on Value Chain Finance organized by Academia de Centroamérica in San José, Costa Rica. The views expressed here are those of the authors and are not necessarily those of the sponsoring organizations or others involved in the research.

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1. INTRODUCTION: VALUE CHAINS AND FINANCIAL MARKETS

This case study takes a close look at **two dimensions** of the process of expansion of **access** to financial services (particularly credit), for small and medium agricultural producers in developing countries, both related to their participation in new types of value chains. The analysis attempts to look past the question of where small farmers now typically turn for the satisfaction of their demands for credit. It focuses, instead, on the several ways that existing or potential value chain relationships can facilitate increased access to a broad range of financial services. In addition, the case study looks at the converse direction of causality; that is, it explores ways in which expanded access to the services from financial intermediation can facilitate increased and improved smallholder **participation** in such chains.

Intriguing examples of these **new types of value chains**, which suggest their potentially strong influence on the evolution of rural financial markets in Central America and other developing countries, are the new structures of vertical integration and new kinds of implicit contracts that are being rapidly created around supermarkets. Following dynamic changes in consumer preferences and demand patterns, **supermarkets** have been expanding vigorously and have been revising the arrangements for their purchases from small and medium agricultural producers. These changes have had important implications for the producers, themselves, the financial transactions in which they engage, and the opportunities for financial intermediaries to expand their rural outreach.

It is not the purpose of the current case study to examine the structure of these new value chains. Rather, the main purpose is to examine the influence of these chains on the pace and style of rural **financial deepening**. The analysis also sheds light on the converse question of whether increased access to financial intermediation can assist in **democratizing** these very chains, by helping small and medium producers overcome finance-related barriers to entry. In this particular respect, financial services can serve as “inputs for increasing the competitiveness and earnings of particular value chains... and particular actors within them” (Fries and Akin, 2004).

Efficient and sustainable financial intermediation can be a source, moreover, of a broad range of services that assist in the farm-household’s income generation and risk management, both in support of its participation in the value chain and of its other welfare-enhancing activities.

1.1 MOTIVATION AND BROAD QUESTIONS

The motivation for the case study responds, on the one hand, to the belief that a more effective integration of small and medium producers into rapidly growing and modernizing **value chains** can contribute to the welfare of their households and to the creation of wealth in poor communities (Downing, Field and Kula, 2005; Dunn, 2005). The motivation also responds, on the other hand, to the belief that these rural households demand a **broad range of financial services**, beyond short-term credit, which are critical for their welfare. While the traditional financial arrangements found along value chains do not typically satisfy many legitimate demands for these financial services, participation in the new types of value chains may facilitate access to these services.

Moreover, while various dimensions of the potential effects of participation in dynamic value chains and of the new contractual relationships associated with supermarkets have been examined in detail elsewhere (Reardon et al., 2005a), much less has been studied about the implications for financial markets of such changes in marketing structures. Likewise, there is a gap in the literature related to how access to finance can change the dynamics of market participation (in particular, who is able to participate and who is not). One purpose of the research reported here has been to fill these two gaps.

Therefore, while the analysis recognizes several important roles played by the changing relationships along value chains, it focuses, on the one hand, on the implications of these changes for the evolution of **financial intermediation** in the rural areas. The results from the case study have implications, on the other hand, for the promotion of mechanisms to increase participation in value chains by small and medium agricultural producers.

The document first presents a conceptual framework for the analysis of these issues. Next, it reports on the results from a case study undertaken in Central America, to follow the purchase arrangements and contractual relationships of a private distributor of fresh fruits and vegetables (Hortifruti), in order to extract lessons about the hypotheses obtained from the conceptual framework. Before dealing with these specific issues, however, it may be useful to place the enquiry within a broader framework.

From the most general perspective, the questions to be addressed are the following:

- a. To what extent are the existing credit constraints a **barrier to entry** for small and medium agricultural producers into high value-added chains?
- b. To what extent can financial deepening facilitate the entry of larger numbers of **small producers** into these new value chains, by offering access to alternative sources of external credit (that is, to loans from a source other than the institutional buyer or an input supplier) as well as to other financial services (such as deposit facilities and insurance)?
- c. To what extent can participation in these new value chains improve the producers' overall **access to credit**, compared to the ability of producers who are not participants in these chains to satisfy their demands for credit?
- d. To what extent can the multiplication of the new contractual relationships create conditions more favorable to an expansion in the **rural outreach** of the portfolios of financial intermediaries, thereby further diversifying their portfolios?
- e. What are the specific **channels** through which the expansion of access to credit may take place, as a result of producer participation in the new types of value chains, such as those related to supermarkets?
- f. How does the emergence of new vertical relationships along the value chains influence the evolution of the **traditional** marketing arrangements, already in place, and of the financial transactions embedded in them?
- g. How does development of the new value chains influence the producers' access to **other financial services**, which are also important for household welfare, beyond simply improving his or her access to working capital?

A detailed consideration of each one and all of these general questions would be a formidable task. Thus, although the answers to these various questions are closely interconnected, the current case study focuses mostly on two channels for the potential influence that the emergence of new types of value chains may have on differential degrees of access to credit. The document discusses, nevertheless, several of these other issues and highlights the need for additional research to resolve some of the pending questions.

1.2 TWO CHANNELS OF INFLUENCE: DIRECT AND INDIRECT

This case study examines and compares two dimensions of the influence that the linking of producers to the new value chains has on their participation in rural financial markets. One of these dimensions is related to the role that various **marketing intermediaries** along a value chain (such as crop

consolidators, traders, wholesalers, retailers, processors, supermarket chains, fast-food chains, and exporters, and input suppliers, among others) may play **directly** as a source of credit for producers.

This is the perspective adopted by traditional *input supplier/output buyer credit models*. According to these models, the existence of **vertical linkages** within marketing system creates opportunities for numerous financial transactions, with funds and/or goods (inputs and outputs) flowing in both directions. Funding at least in the form of short-term advances or short-term supplier credit is usually extended from one stage of the marketing chain to another (Shepherd, 2004). In many cases, the farmers are users of credit while, in other cases, they are providers of credit, to the extent to which they accept short-term deferred payments from traders and other buyers of their crop. The presumption of these models is that the vertical linkages facilitate the access to credit gained by various types of actors along the chain. Of special interest to policymakers is the access that producers may gain to credit from input suppliers or from those who purchase their crop.

The recent expansion of **supermarket chains** has led, in turn, to the development of bundles of formal or informal contractual linkages between new institutional buyers and several types of agricultural producers, frequently by-passing traditional wholesalers and other existing marketing structures. The case study addresses the implications for financial deepening of the resulting transformations of the structure of wholesale and retail domestic markets for agricultural goods in Central America and several other developing countries.

The second dimension considered here is related to the **indirect** impact that the long-term contractual arrangements and key business development services provided by some marketing agents, such as the new institutional buyers associated with supermarket chains, have on different degrees of access to credit.¹ The case study addresses the implications that these formal or informal **contractual** relationships, as well as the improved skills that can result from these relationships, may have on the producers' access to alternative sources of credit and of other financial services, **outside** of the value chain (for example, from financial intermediaries).

Efficiently provided non-financial services and other dimensions of the new contractual relationships may indeed assist in the generation and expansion of **creditworthiness**. This can occur in several ways. It can increase the profitability and reduce the risks faced by the producers and thus enhance their core repayment capacity. It can also facilitate their cost-effective signaling to potential lenders of their creditworthiness as well as improve these lenders' ability to assess and recognize this creditworthiness.

This indirect impact on access to credit may also result from the efforts of specialized public and private sector providers of key business development services. These services can be made available either by a buyer or a seller along the value chain or by a specialized provider, such as a consulting firm or a non-government organization (NGO) that offers technical assistance. This raises the question of whether the type of the **source** of technical assistance for small and medium agricultural producers matters in determining changes in the producer's degrees of access to credit. This question

¹ **Business development services** refer here to the broad range of non-financial services provided to any business, including farmers, by a wide array of service providers. These services can be paid for explicitly or they can be paid for as part of an interlinked contractual relationship.

is not directly addressed in this case study; rather, the analysis focuses on the narrower issue of the effect that such technical assistance may have on creditworthiness.²

One important question the study addresses is whether contractual relationships offered by supermarket chains to a broad range of producers not exclusively linked to one specific crop induce a greater expansion of financial services than those relationships that are facilitated by value chains for specific commodities, such as coffee, cocoa, sugar cane, tobacco or cotton (Rodriguez-Meza, 2003).

From this perspective, supermarkets offer a **new breed** of interlinked transactions, not linked to a particular crop. In several instances, there seems to be, at least so far, more rivalry among supermarket chains than among single-crop buyers, while the year-long demand of supermarkets for multiple products allows the producers greater opportunities for diversification. Thus, the new contractual relationships may create an environment more conducive to the expansion of the supply of a broad range of financial services from outside the value chain, since diversified producers are more likely to demand a wider array of financial services and their diversified portfolio of activities mitigates credit risk.

The case study examines these two dimensions direct and indirect, in their different modalities of how the new types of marketing arrangements evolving around supermarket chains may gradually improve the creditworthiness of small and medium agricultural producers, in different environments.

In turn, participation in the new types of value chains usually requires the willingness to adopt profitable but risky innovations and the ability to invest in their implementation. Funds from sources external to the producer are usually required for this. Thus, the absence of financial intermediation may create barriers to entry into these chains. Once participation in the new market relationships has been established, however, the resulting linkages may actually improve the producer's creditworthiness and thereby his or her ability to gain access to additional financial services.

1.3 ORGANIZATION OF THE DOCUMENT

The document proceeds as follows. The second part develops a detailed conceptual framework, centered on a rigorous discussion of the specific concepts of financial intermediation and of **creditworthiness** used here. Later in the document, this framework serves to organize the observations of the influence of Hortifruti, an institutional supplier of a multinational supermarket chain, on the development of small and medium producer creditworthiness in three Central American countries (Costa Rica, Nicaragua and Honduras). Several hypotheses for the empirical research are derived from the conceptual framework.

The third part briefly describes the rise of supermarkets in Central America and the implications of their operations for the formation and expansion of the creditworthiness of the agricultural producers that supply them. The influence of the resulting linkages on financial markets is contrasted with that of more traditional single-product interlinked transactions. The fourth part then proceeds to describe Hortifruti, a specialized procurement firm within an international supermarket holding corporation, and the development of its buying practices. This part identifies key features of the new contractual relationships that are emerging and describes the business development services offered by the

² An interesting question, not addressed here, relates to the comparative advantages of several types of providers of technical assistance and of other business development services. There may be some types of services that are best provided by outsiders and some types of services that only those inside the value chain can provide at a reasonable cost. While the services provided by both types of sources have the potential for improving creditworthiness, there may be differences with respect to the channels through which these effects occur.

supermarket chain. These linkages have had implications for the financial experience of the small and medium agricultural producers involved.

The fifth part describes the methods used for the field work conducted in the three countries and presents the most important results from this assessment. Beyond the description of the participating producers and their financial history, this part organizes the field observations, in an effort to verify the validity of the preliminary **hypotheses**, advanced earlier in the document, and to identify the channels of influence of the operations of Hortifruti on the creditworthiness of its suppliers. The different degrees and patterns of expansion of the purchasing activities of Hortifruti and their influence on creditworthiness in the three countries studied are briefly contrasted. The sixth and final part derives lessons from the experiences observed in the three countries. It presents a summary of findings and some policy recommendations. The document includes an extensive set of references used in the analysis.

2. CONCEPTUAL FRAMEWORK: DEFINING CREDITWORTHINESS IN THE CONTEXT OF FINANCIAL INTERMEDIATION

The importance for any country of financial **intermediation**, in promoting a more efficient mobilization of savings and allocation of resources (across both time and space), in easing the trading of factors of production, goods and services, and in facilitating the trading, hedging, diversifying, and pooling of risk has been extensively documented. Both theoretical reasoning and empirical evidence identify a positive relationship between financial intermediation and economic including rural development (Levine, 1997; Conning and Udry, 2005).

Similarly, all kinds of rural households and firms **demand** a broad range of financial services, such as:

- a. safe and convenient deposit facilities and financial instruments that make saving and the accumulation of various types of liquid reserves, including those for precautionary purposes, easier;
- b. several types of loans that allow additional investment, production, marketing gains, and consumption smoothing, beyond self-financing;
- c. low-cost instruments that facilitate transactions, such as a stable means of payments and facilities for currency exchanges and remittances, and
- d. insurance and other efficient tools to smooth consumption and anticipate and cope with risk.

These financial services are demanded in order to improve the management of liquidity, deal with risk and cope with adverse shocks in less costly manners, implement improvements in technology and productivity, and accumulate assets more efficiently. Thus, increased **access** to sustainable financial **intermediaries**, which are able to supply a broad range of financial services (as opposed to only short-term credit), at competitive prices and in terms and conditions adapted to the demands of small and medium agricultural producers, allows the rural population to take advantage of the gains from greater participation in financial markets. For smallholder producers these benefits also include, on the one hand, the transportability of transparent credit histories from one intermediary to another and, on the other hand, the increased bargaining power that may come from being free of debt obligations to specific buyers.

In most developing countries, however, formidable obstacles have kept the rural **outreach** of financial intermediaries quite limited. The obstacles arise from shortcomings of either the demand or

the supply of services and they are greater when the clients are poor, the transactions are small, risk cannot be easily mitigated, information is scarce, and the mechanisms for contract enforcement are unavailable. Financial services matter, but it is not easy to supply them.

The rural demand for the services of financial intermediaries is often constrained by the high transaction costs of accessing them, by a limited ability to signal creditworthiness to potential lenders at reasonable costs, and by low repayment capacity due to lack of market opportunities. Supply is similarly restricted due to lack of reliable information about the potential borrowers, the difficulty of contract enforcement, and the covariant risk facing potential lenders in rural areas.³ Costs and risks increase with **distance**, in all of its dimensions (geographic, social, ethnic, cultural, linguistic, occupational, and the like) and with isolation. Actual access to funds reflects differences in creditworthiness. A rigorous definition of the specific concept of **creditworthiness** used here is developed next.

2.1 LAGS IN RURAL FINANCIAL DEVELOPMENT

In many low-income countries, such as those that are the focus of the current case study, a reduction of the substantial **rural lag** in the development of the financial system compared to its development in urban areas is an important public policy objective (Gonzalez-Vega, 2003a). The shortcomings include the narrow **range** of financial intermediation services offered to support the diverse efforts of the participants in agricultural value chains. Indeed, only a few services are offered, in ways that do not adequately address the requirements of the portfolios of activities found along these chains.

These concerns have been accompanied by program recommendations about how to expand the frontier of finance into the rural areas and by donor-financed projects that have attempted to do so. Unfortunately, they have been matched by few successful experiences based on sustainable **innovations** in financial technologies or on the permanent removal of **barriers** to financial transactions in the rural areas of these countries.

In general, the removal of existing barriers can take place only in a gradual and selective manner, not at a uniform pace. Some types of services will become available earlier while others will emerge later; some segments of the population will gain access to these services before others. Still other services will have a low probability of being developed, particularly when the **density** of population is low and key physical and institutional **infrastructures** are missing. Development of wholesale and retail markets and the emergence of **interlinked transactions** may favor the expansion of the supply of financial services, but only toward particular segments of the population. Thus, the expansion of the frontier of rural finance is not only slow but also uneven.

Faced with the insufficient outreach of financial intermediaries into the rural areas, actors along agricultural value chains as well as some international donors have seen interlinked credit transactions between buyers, processors or input suppliers, on the one hand, and agricultural producers, on the other hand, as a realistic substitute for financial intermediation.

These arrangements, sometimes called *supplier finance* or **value chain finance**, rest on the advantages that different actors along a value chain have in lending to other actors along the same chain. These advantages emerge from existing relationships, in various ways (Chalmers et al., 2005). They overcome information gaps, because of the familiarity and trust between actors. They have easy, embedded repayment mechanisms, better suited for cash-strapped farmers. They facilitate the

³ **Covariant risk** for a lender refers to the risk of events that affect all borrowers equally, such as a natural disaster or a macroeconomic event. Covariant risk tends to be greater for lenders in rural areas, since large numbers of borrowers are engaged in agricultural production dependent on exogenous factors such as the weather.

provision of technical assistance to producers. Not surprisingly, buyers, traders, and inputs suppliers are frequently the only actors willing to extend credit in the rural areas.

There are important drawbacks of such arrangements, however, including the limited range of services offered (typically only short-term credit), the constraints of the lending entity (without access to funds from outside the value chain, most of these actors will have a difficult time in expanding their credit portfolios), the high probability for the credit relationship to disappear when market dynamics change (since such transactions are often tied to specific crops), and the greater potential for exploitative lending (Chalmers et al., 2005). Given the advantages and disadvantages of direct value chain lending, the donor and practitioner communities have been investigating new models to explain the role in financial markets of different actors in the value chain. The current case study contributes to this debate and highlights key roles for financial intermediation.

In particular, the emergence of financial transactions depends on the types and frequency of all kinds of past and present **interactions** between borrowers and lenders, on the **learning** processes involved in these relationships, on the accumulation of information and of critical **intangible assets** (such as reputations or credit histories), in addition to the tangible assets (for example, land) traditionally accepted as collateral for loans, and on the development of **infrastructure** that assists in the reduction of transaction costs and facilitates the adoption of particular lending technologies.

In any **credit transaction**, the lender faces three basic types of problems:

- a. how to forecast the **probability** that the loan will be repaid,
- b. how to design **incentives** to increase the probability of repayment by the borrower, and
- c. how to adopt mechanisms to reduce the lender's **losses** when repayment does not actually occur (that is, when there is default).

Overcoming these barriers requires, among other things, information to establish the ability and willingness to repay of the applicant and the design of a structure of incentives to induce a greater willingness to repay. Any loan transaction requires that the borrower and the lender **jointly** overcome these barriers.

2.2 OVERCOMING BARRIERS TO RURAL CREDIT TRANSACTIONS: ABILITY TO REPAY

The probability of repayment of a loan of a particular size (given the terms and conditions of the loan contract) depends on the applicant's ability and willingness to repay. In turn, **ability** to repay depends on a number of circumstances. One of the most important is the nature of the economic activities undertaken by the borrowing household. One of the key innovations introduced by microfinance has been the effort to consider, as central to the lending technology, the overall **portfolio** of economic activities of the farm-household.

Two central features of the household's portfolio matter in determining ability to repay. One is its **profitability** (that is, the expected rate of return) that would make it possible for the borrower to repay the loan and keep something to address the household's own needs. Profitability depends, in turn, on features of the productive **opportunities** available to the borrower. It is important for the lender to encourage and monitor the borrower's diligence in keeping his or her ability to repay, in order to reduce the probability of default. Because monitoring is costly, the design of the loan contract usually incorporates incentives for the borrower to be diligent. In economic theory, these are called **compatible incentives**. For example, the threat that a defaulting borrower will not be allowed

in the future to sell his product to a key buyer is an incentive for the producer to perform well in the credit transaction.

The other central feature of the portfolio of household activities is **risk**, given by the possibility that, if things do not go as expected, the outcome might be short of the amount needed for repayment. Sometimes risk is related to shortfalls in **yields** and in output (for example, due to pests or losses of livestock); sometimes it is related to the fall of market **prices** for outputs, as experienced by coffee growers in Central America or the increase of market prices for inputs, as has recently been the case for petroleum-related products. Different **risk profiles** are linked to different classes of applicants (that is, some applicants imply greater risks for the lender than others).

Risk is also influenced by the **state of nature**, namely, by the actual materialization of **exogenous** circumstances that are beyond the control of the borrower and the lender but that nonetheless have an influence on the outcome of the productive activities. One of the main features of agriculture that makes it particularly risky in the eyes of potential lenders is the high incidence of exogenous circumstances on productivity.⁴

Ability to repay also comes from accumulated **wealth**, namely, from assets that can be sold in order to repay outstanding loans. When an assessment of the assets that can be pledged as traditional **collateral** is the only screening tool available to the lender, the allocation of credit has distributional implications. That is, the rich gain access to loans based on their previous wealth and get richer, while the poor are excluded from credit portfolios because they do not possess the kinds of assets that would allow them to **signal** their creditworthiness. One important innovation of microfinance has been the practice of incorporating **intangible** assets, such as social reputation, among incentives to repay. Similar mechanisms are used in borrowing groups, through the joint liability of members. Loans from the internal account of village banks and from friends and relatives as well as remittances also increase the ability to repay institutional loans.

2.3 OVERCOMING BARRIERS TO RURAL CREDIT TRANSACTIONS: WILLINGNESS TO REPAY

Willingness to repay originates, in turn, from a number of circumstances. These determinants are related to what lenders sometimes describe as the borrower's **honesty**, as reflected in his or her reputation of having satisfactorily fulfilled various contractual obligations. The value of honesty and reputation are part of the applicant's **social capital**. The efficient operation of credit bureaus and other credit rating instruments not only encourages honesty but it actually creates a **credit history**, an intangible asset for the honest borrower that increases his or her creditworthiness.

Willingness to repay is mostly determined by the structure of **incentives** embedded in the contractual relationship; namely, it is determined by the expected penalties faced by defaulters and/or by the gains accruing to those who build robust reputations of contract fulfillment. Sometimes, incentives to repay emerge from fears of loss of the assets pledged as collateral. In microfinance, the key incentives to repay originate from the **value of the relationship** between the two parties.⁵

Given incomplete, imperfect and asymmetric **information** about risk/return combinations information that is costly to acquire and to interpret the lender is not able to easily identify potential

⁴ Macroeconomic and political instability can also be a source of exogenous risk.

⁵ Borrowers who value the quality of the services offered by the financial intermediary and who fear loss of access to the array of services potentially provided by the lender in the future make special efforts to repay. When the borrower enjoys attractive productive opportunities, with ample scope for expansion, and when the lending organization signals its sustainability over the long run, these incentives are strong (Gonzalez and Gonzalez-Vega, 2003).

defaulters. To accomplish this, the lender must develop costly risk-reducing **technologies**, to distinguish good clients from potential defaulters. Lenders encounter greater difficulties in expanding their services toward those segments of the population engaged in activities that are particularly vulnerable to exogenous shocks and whose outcomes are particularly uncertain. Inevitably, however, **idiosyncratic** shocks such as illness can lead to the unexpected failure of the activities of borrowers who are usually safe.

When the adverse shocks are **systemic**, whole categories of borrowers may encounter difficulties to repay. This is frequently the case in agricultural communities, where the activities are heavily concentrated in a single crop or where yields depend on common climate patterns. In other cases, political actions, such as the loan pardoning the researchers observed in Honduras, reduce willingness to repay.

2.4 JOINT CREATION OF CREDITWORTHINESS

So far, the discussion indicates that there is a basic, **objective** element of creditworthiness. This objective but not easily observable component represents a **core** creditworthiness, which is based on the applicant's actual ability and willingness to repay a loan of a given amount and at given terms and conditions, with repayment never being certain.

In effect, if all the required information were available to both parties, it would be possible to identify this core creditworthiness, at no cost. Information, however, is imperfect and asymmetric, and the lender cannot easily observe core creditworthiness. Moreover, information imperfections introduce incentives for opportunistic behavior, which further increases the risk of default.

Thus, given an applicant's actual ability and willingness to repay (which are the foundations of a legitimate **demand** for credit) and given a lender's degree of risk aversion, a loan will not be granted that is, **supply** will not match this demand unless the lender has been **persuaded** that the corresponding probability and expected losses from default are sufficiently low. Therefore, in addition to the core ability and willingness to repay, there must be a **recognized** creditworthiness. That is, the decision to lend will be based on the lender's **subjective** appreciation of those circumstances that influence the applicant's core creditworthiness.

This appreciation always imperfect depends on the information available to the lender, on the effectiveness of contract design in creating sufficient incentives to repay, and on the existence of cost-effective mechanisms for contract enforcement. Thus, the lender's recognition of creditworthiness depends on the effectiveness of the various components of the lending technology. Moreover, while the **lending technology** assists in the decision, its implementation is always costly. The potential borrowers can, however, contribute to a reduction of these costs by issuing credible **signals** about their opportunities and their intentions to repay. That is, potential borrowers can help in **revealing** their own creditworthiness.

In summary, **effective creditworthiness** is created only when the borrower has persuaded the lender to trust his or her ability and willingness to repay a loan of a given amount. For the credit transaction to occur, both the objective and the subjective tests must be satisfied. Therefore, any loan transaction requires both the presumed existence of the core creditworthiness as well as the **revelation-recognition** of this creditworthiness **jointly** by the borrower and the lender. Any circumstances that may reduce the costs of revealing or of recognizing creditworthiness promote greater access to credit.

Differences in the pace of incorporation of different types of producer-borrowers into rural financial markets reflect, on the one hand, different combinations of their ability and willingness to repay loans (derived from the objective, core creditworthiness of each applicant) and, on the other hand, the

different capacity of the potential borrowers to **signal** their core creditworthiness. That is, they reflect differences in their capacity to demonstrate, in a manner that is cost efficient for both borrower and lender, that these ability and willingness exist. In turn, these differences also reflect the unequal capacity of various types of lenders to screen applicants and recognize their creditworthiness.

For these reasons, both borrowers and lenders have **incentives to invest** in the creation and expansion of creditworthiness. They jointly engage in the offering-gathering of information – to establish ability and willingness to repay – and they jointly invest in the development of a **long-term relationship**. That is, once a first loan is granted, they will both engage in the building of **reputations**: the borrower, with the punctual service of the loan, in order to gain continued access to additional services; the lender, with a good quality of services, in order to increase the value of the relationship for the borrower and, thereby, improve incentives to repay. The lender must also gain a reputation of sustainability, to make these promises credible. When a successful relationship continues over a period of time, both borrower and lender benefit from the **sunk costs** of having been **learning-by-doing** together. Additional transactions then become possible at lower costs and risks for both parties and, through demonstration effects, other financial institutions may begin to copy these successful efforts.

2.5 CREDITWORTHINESS AND THE LINK AMONG INVESTMENT, UPGRADING AND FINANCIAL SERVICES

If the costs of jointly creating creditworthiness are not prohibitive, the transaction will emerge and access to credit will be gained. As additional creditworthiness is built over time, there will usually be gradual **improvements** in the terms and conditions of access to loans: amounts will become larger, effective interest rates as well as transaction costs will decline, terms to maturity will get longer, and the range of services offered will get broader.

Indeed, in this document, access to credit is not defined simply as the agricultural producer having had or not having had loans. Rather, **access** to credit is defined by the evolving **attributes** that make a loan and preferably a financial relationship a more useful instrument in the pursuit of the numerous objectives of the rural household. Thus, even for those producers who already have had loans, the quality of their access can further improve. Frequently, such improvements in access to credit are indispensable in allowing a farm-household to **upgrade** by expanding its current activities or taking advantage of new, higher-value opportunities (Fries and Akin, 2004). Better access (to longer-term credit) is often needed to increase a rural household-firm's **ability** to invest.

The nature of a **long-term** relationship is also critical in defining the ability of the farm-household to use other financial services (such as deposits and instruments to manage precautionary reserves, remittances, and insurance) for the management of risk. High costs in managing and coping with risk influence the producer's willingness to adopt highly profitable but **risky innovations**, such as those needed to participate in the modern value chains. Access to broader and sustainable financial relationships are thus needed to increase the producer's **willingness** to invest and adopt these innovations. Indeed, in the absence of adequate tools to anticipate and cope with adverse shocks and in the pursuit of **consumption smoothing**, a risk-averse household will prefer traditional activities, with lower but more stable and predictable returns, to the new options.

Most importantly, participation in the new types of value chains often requires both the willingness to adopt innovations and the ability to invest in their implementation. Lack of access to some of these dimensions of financial intermediation may represent barriers to entry into the new value chains. Once participation in the new market relationships has been established, however, the resulting linkages may actually improve the producer's creditworthiness and thereby the terms and conditions

of credit as well as his or her access to other financial services. This virtuous circle of increased creditworthiness and value chain participation is discussed below.

In summary, given particular market conditions and household characteristics, most producer-borrowers have incentives to invest in building up a set of **relationships** that address their demands for a broad range of financial services and to choose those sources that offer these services at the lowest cost (highest value) possible. Lenders, in turn, have incentives to invest in building up a set of relationships with established clients that can generate a profitable and sustainable portfolio.

Different paths of incorporation of small and medium agricultural producers into rural credit markets reflect, therefore, different ways of creating and expanding creditworthiness. In each case, there is a different division of labor between the borrowers and the lender, in overcoming information and contract enforcement imperfections.

Along each one of these alternative paths for the creation and improvement of creditworthiness, increased access to credit and expanded rural outreach take place when any one of the following circumstances occurs:

- a. The **core** creditworthiness of the small or medium agricultural producer improves, leading to an expansion of his or her legitimate demand for loans. This occurs, for example, when the producer-borrower implements a better a more profitable and/or less risky project or when he or she finds that the incentives to comply with the obligations of the loan contract are more attractive than before.
- b. The producer improves his or her capacity to signal, to the potential lender, his or her ability and willingness to repay; namely, when a **revealed** creditworthiness that the lender can recognize is generated. This occurs, for example, through the reputation effect gained from a contractual relationship, such as the linkage with the institutional buyer associated with a supermarket chain.
- c. The lender adopts or develops a more cost-effective method to identify the producer's ability and willingness to repay; namely, when a **recognized** creditworthiness emerges. This occurs, for example, through innovations in financial technologies (such as the technologies introduced by microfinance best practices), through the establishment of the supporting infrastructure (such as property rights, impartial courts or credit bureaus), or through increased availability of the inputs (such as specialized human capital) required to implement existing lending technologies.

The case study suggests that **all** of these three influences come into play with the emergence of the new types of value chains associated with supermarkets. To demonstrate this, in the next section the document briefly describes the emergence of supermarkets in Central America. Then, it compares, on the one hand, the procurement practices of the new institutional buyers associated with supermarket chains and, on the other, different types of interlinked transactions that were highlighted in the earlier literature, for their ability to facilitate credit flows in agriculture. This discussion will lead into the generation of the main hypotheses for this case study.

3. INTERLINKED TRANSACTIONS AND THE RISE OF SUPERMARKETS

One of the salient dimensions of the growing globalization of retailing has been the **supermarketization** of domestic food markets in many low-income countries, as has been forcefully argued by Reardon (2005). In response to rapidly shifting consumer demands, retailing chains have become the main providers of market signals, which cascade along the value chain to processors, wholesalers, and producers, thereby substantially influencing and modifying contractual relationships

and marketing patterns. Because supermarkets have often responded to these shifting consumer demands in terms of cost, quality, shopping environment, diversity and convenience, they have commanded an ever-increasing share of the domestic food market throughout Latin America (Berdegué et al., 2003).

These changes have the potential to influence important dimensions of rural financial markets, in particular by improving the creditworthiness of small and medium agricultural producers. Moreover, the extent to which small and medium producers may be left behind, as these trends continue, may in important ways depend on their access to the financial services needed to improve their productive and marketing activities through investment and innovation. Therefore, these trends and transformations represent major opportunities and threats for small and medium agricultural producers.

In this process of transformation, Central America has been lagging behind the rest of Latin America only by a few years, and it is catching up rapidly. On average, the share of supermarkets in overall food retailing increased from 5-10 percent in the 1990s to 30-40 percent today (Reardon, 2005). Indeed, the rates of growth of supermarket food sales have been higher than the rates of growth of overall food sales, the rates of growth per capita income and the country's population growth. Moreover, supermarket purchases of fresh fruits and vegetables amounted to US\$ 300 million by 2002, while exports of fresh fruits and vegetables from Central America (excluding bananas) amounted to US\$ 500 million (Berdegué et al., 2003).

As pointed out by Reardon (2005), this transformation has led to the **centralization** and eventual **regionalization** (across the Central American countries) of the procurement systems of the leading supermarket chains. The field work for this case study verified that regionalization is already a fact for Hortifruti, for the cases of some fruits and vegetables and of dry beans. The recent purchase by Wal-Mart of a major share of the holding company that owns Hortifruti will further accelerate this regionalization of procurement. The expectation is that these changes in domestic markets will act as a **spring board** to allow these countries to compete more successfully in international markets and take greater advantage of income-expanding opportunities, such as those provided by the Free Trade Agreement between Central America and the Dominican Republic with the United States (CAFTA-DR).

Along with these changes in procurement patterns, there has been a rapid rise in the adoption of private quality **standards** (Balsevich et al., 2003). As a result, small and medium agricultural producers are now expected to meet a whole new set of cost levels and margins, safety standards, and packaging and traceability requirements, approaching those used by globalized retailing chains. Their ability to meet these higher standards will determine their ability to take advantage of these new market opportunities. For those small and medium producers able to meet these standards, their participation in this process could even become a spring board that would allow them to move forward into exporting markets. Expanded financial intermediation may reduce some of the barriers to entry that could constrain participation by these producers in the modern value chains as well as any potential future entry into export markets.

Among several changes in domestic procurement systems, these developments have resulted in the consolidation of centralized **buying points** and **distribution centers**, with the flows of fresh fruits and vegetables and other agricultural products moving away from the traditional wholesalers and wholesale markets and toward the new institutional buyers. These changes have transformed, in turn, the patterns of finance found along these value chains.

3.1 LONG-TERM AND COMPLEX CONTRACTUAL ARRANGEMENTS

These shifts in marketing schemes have reflected the supermarket chain's incentives and capacity to impose various types of standards of quality and performance. The changes in procurement practices have also resulted in a shift from **spot** markets where farmers and buyers meet for one-time transactions, characterized by undemanding quality requirements and routine delivery conditions to formal or informal long-term **contractual** relationships between, on the one hand, the new institutional buyers and, on the other hand, new specialized wholesalers (who frequently work for the institutional buyers) and/or enterprising agricultural producers who sell directly to the new types of buyers.

Indeed, the new marketing linkages demand that the producer "meets the requirements of those lead chains to stay at least in the most dynamic and most profitable food market segments; competitiveness in this context means convincing a half dozen procurement officers that you have the right combination of cost/ quality/ safety (including private standards)/ volume/ one-stop-shopping/ consistency/ packaging that they want from you" (Reardon, 2005, p. 6).

These contractual relationships thus involve **complex bundles** of commitments and standards of performance for both parties, which entail major investments on their part. First, to be able to meet the volume and the timing of the requests for produce of the new institutional buyers and to achieve the standards of quality and conditions of delivery required by them demands substantial **investments** of time and effort on the part of those small and medium agricultural producers who want to engage in such contractual arrangements.

These investments come in two forms. On the one hand, there is investment in learning, knowledge and skills, acquired by exposure to others – producers in the same area, crop buyers, input suppliers, providers of technical assistance and the like – and acquired through **learning-by-doing**, experimenting, and trial and error, with the inevitable potential mistakes and losses. On the other hand, sometimes new **physical** investments are needed in irrigation structures, greenhouses, trucks and other inputs required for enhancing productivity and increasing delivery capacity.

Both types of **investment** hold potential to increase incomes over the long run, but both are costly and risky for the producer. Further, the investments in learning are more likely to lead to improvements if the producers gain access to a new set of knowledgeable actors. In turn, the investments in physical infrastructure will be more feasible if the producers gain access to a new set of financial service providers.

The farming household will be willing to engage in these extraordinary efforts only if there is a credible **expectation** of sufficiently high returns to be earned over the long term. Namely, for the farmer considering this option, the possibility of sustained, steady, **repeat** transactions is at the core of the incentives for participation in the new procurement arrangements rather than in the traditional spot markets.

That is, the farmer must be interested in the evolving set of opportunities implicit in the bundle of services and commitments embedded in the new contractual relationship. The **credibility** of the promises about these opportunities for future transactions is crucial because, as the field work for the case study shows, many farmers have had bad experiences with informal marketing agents, government experiments, and integrated development programs that, while in pursuit of similar goals, failed to deliver improvements in the welfare of the farming household.

Second, the supermarket chains and associated institutional buyers also invest in the development of **long-term** relationships with their farmer suppliers. To meet dynamic consumer demands, in an increasingly competitive setting, supermarkets need to be able to handle large volumes of produce

while maintaining quality standards. Frequently, this involves the introduction of private labels (that is, brands unique to the supermarket chain). Their fresh produce sections both are high-profit centers and are particularly sensitive in the development of the chain's image and competitiveness.

Successful progress in these new retailing efforts thus requires **long-term**, sustainable relationships with dependable suppliers of fresh fruits and vegetables and similar products. Traditional wholesalers have not been able to provide the necessary volumes and quality demanded by the supermarket chains.

Instead, some traditional processors have become **maquiladoras**, prepared to assemble, package and/or process agricultural products on behalf of the chain and to work closely with supermarket officers, in order to assure a sufficiently diverse, high quality, and consistent supply of agricultural products (Alvarado and Kiuppsy, 2002). The *maquiladoras* have developed, in turn, their own longer-term contractual relationships with independent farmers.

In several cases, the field work for the current case study found less satisfaction, among the producers, with their narrower arrangements with the *maquiladoras*, as compared to their satisfaction with the contractual arrangement with Hortifruti's own centralized buying point. This is not surprising, not only because of the greater capacity of the larger institutional buyer to handle the transactions more efficiently, but because the farmers find additional **value** in the multiplicity of dimensions and opportunities offered by their relationship with a buyer such as Hortifruti. The expected permanency/sustainability of their contracts with the centralized buyer is also more credible.

This very **multiplicity** of valuable dimensions can be observed by a potential lender, as well, at the time of assessing a farmer's creditworthiness. Moreover, in ways similar to the challenges faced by potential lenders, the institutional buyers have to work with only imperfect and asymmetric **information** about which specific farmers possess the endowments of experience, skills, location, attitudes, and ability to respond to these modern requirements. Thus, institutional buyers incur **search** costs, in their attempts to identify a list of preferred suppliers ready to engage in these long-term contractual arrangements.

The outcome of these information-gathering efforts is a process of careful **screening**, through which the supermarket chain and/or institutional buyer accumulate *private information* about specific farmers. This is equivalent to the costly management of information that must be undertaken by potential lenders. Moreover, the failure of some farmers to comply with the set of performance requirements increases search costs for the institutional buyer, as only a portion of the producers incorporated initially will be retained. In addition, to enhancing their capacity to deliver, therefore, the institutional buyer invests in training, advising, and developing the entrepreneurial abilities of the participating farmers.

When there is desertion, side-selling, or lack of compliance among the farmer participants, the institutional buyer cannot recover this investment and experiences a loss. Thus, the buyer may be willing to pay something in order to avoid these losses. Indeed, when a **star producer** is identified, the supermarket chain and associated institutional buyer have strong incentives to not let this producer go. There are, therefore, identifiable sunk costs for the organization in developing long-term relationships with those producers that have demonstrated a good reputation.

Moreover, at least in theory, the institutional buyer should be willing to offer something in return the equivalent of **efficiency wages** to those producers that make special efforts that is, to the star

producers in order to retain them (Akerlof and Yellen, 1986).⁶ These potential rewards increase the income generating opportunities of those farmers who can overcome entry barriers.

Potential lenders, in turn, are aware of both the superiority of the screening techniques used by the institutional buyer including its knowledge of the market and proximity to the producer and the special treatment that the preferred producers will receive in the long term. Thus, without incurring all of the relevant screening costs, these potential lenders can enhance their evaluation of creditworthiness simply by observing the **sorting** of farmers accomplished by the supermarket chain. In this sense, part of the screening effort is implicitly **delegated** to the supermarket chain. Creditworthiness is revealed/identified in the process.

Among other advantages for the participating small and medium producers, a reduction in **price instability** may be quite important. In Central America, a number of studies have identified exceptionally wide fluctuations in the prices of agricultural products throughout the year and have noted a correlation between household income instability and levels of poverty and vulnerability (Beneke de Sanfeliú and Gonzalez-Vega, 2000). Price instability has been attributed to insufficient storage facilities and lack of access to marketing credit.

Supermarkets are expected by modern consumers to offer fresh fruits and vegetables throughout the whole year. Therefore, the resulting larger and more stable demand for a broad number of products should increase prices and boost price stability throughout the market and, in particular, for the participating farmers. In addition, in contrast to the traditional specialized single-crop value chains, supermarket chains demand a very broad range of varieties and products. This allows for risk-reducing **diversification** for the farmer and for his or her increased **flexibility** to shift production (while not losing the contractual relationship with the buyer) when market demands or tastes change.

Again, the reduction in price instability, sustained demand throughout the whole year, and broader opportunities for diversification lower the risks faced by the participating farmers and, thereby, increase their willingness to participate and, at the same time, augment core creditworthiness by improving their risk profile. The task of the lenders is thus facilitated by the credible **signals** generated in this process, and this should lead to an expansion of their supply of credit.

Moreover, in the rural areas of Central America, where some of the required endowments of experience, skills and attitudes may be comparatively scarce, these producer attributes are frequently independent of **farm size**. Indeed, many small and medium farmers – many of whom are poor – have been able to participate in the new value chains. As noted by Berdegué et al. (2006), farm size, education levels, and incomes are generally less correlated with participation in these markets than other factors, such as geography and the ability to accumulate assets. Nevertheless, important barriers to entry may still prevent many other small producers from taking advantage of these opportunities. Lack of access to credit may be one of them, but it is not the only one and it is not necessarily the **binding** constraint.

Some small and medium agricultural producers may indeed be **willing** to accept the challenges to modernize that are implicit in this process of structural transformation. Their **ability** to participate in these dynamic value chains may depend, however, on their access to credit and other financial services. Some may be able to enter such markets by using various strategies of self-financing to be described later. As these strategies require important accumulations of savings, they may not be open

⁶ **Efficiency wage** theories were developed to explain the coexistence of a positive wage rate and massive unemployment and underemployment. Some further explanations generalized the idea of a linkage between wages and efficiency in terms of incentives, morale and effort intensity. When special effort is difficult to observe, those interested in eliciting it will use efficiency wages, in order to retain those agents who have already demonstrated their willingness to provide the exceptional diligence required.

to many. Indeed, for **credit-constrained** producers, both the creation of creditworthiness prior to participation and the expansion of their creditworthiness, once they are already participating, do matter. There is, moreover, a public interest in this structural transformation, as important **externalities** may be associated with the conversion of farmers, from their original attitudes and traditional technologies, into modern rural entrepreneurs (Chalmers, 2005b). Indeed, through demonstration effects and imitation, productivity-enhancing practices and habits may be acquired by non-participating farmers.

The case study focuses on the impact that these new contractual relationships including the improved set of skills and information obtained by producers as a result have on the creation and expansion of creditworthiness. That is, the case study explores to what extent, through what channels, and in what ways these linkages become **triggers and enhancers** of creditworthiness. It then observes ways in which this process becomes a virtuous circle, turning this improved creditworthiness into a tool to expand the opportunities for small farmers further.

3.2 CREDIT CONSTRAINTS AND OTHER BARRIERS TO ENTRY

In the larger, more demanding, and more profitable markets that are emerging, only those small and medium agricultural producers who are prepared will be able to take advantage of the new opportunities. This raises the question about the extent to which the existing credit constraints and lack of access to other financial services may create **barriers to entry** into these new marketing arrangements.

Clearly, the existing rural lag in financial intermediation risks placing a country's small and medium agricultural producers at a disadvantage in realizing the gains from this transformation. This observation, by itself, highlights the importance of promoting efficient and sustainable **financial intermediation** in the rural areas. Traditional buyer/supplier and other types of value chain finance, such as credit delivered – often in kind – directly to the producer by a buyer or an input supplier, typically fail to offer the range of financial services needed to facilitate the entry of small and medium producers into the new value chains.

In many cases, limited or costly access to the services of financial intermediaries may even deprive small and medium producers of the opportunity to enter into these new relationships, **right** at this entry point. That is, lack of access to financial services can be an actual barrier to **entry** rather than a mere obstacle to further growth and improvement of a participant in the chain. If there are barriers to joining the value chain, they will be excluded also from any business development and financial services linked with this involvement and the associated poverty-alleviating structural transformation.

Nevertheless, for those producers who have already gained entry, the implicit or explicit contractual relationship with the institutional buyer appears to contribute to a building up and further expansion of their creditworthiness. This **enhanced** creditworthiness may, in turn, offer these producers the opportunity to fund investment in additional improvements of their productive capacity and in their ability to deliver their produce according to the terms and standards required by the supermarket chains, thereby reinforcing the initial gains.

As the case study shows, Central American participants in these arrangements have frequently been small and medium producers of a wide variety of crops. The ability of small and medium producers to participate in these chains has also been verified for tomato growers in Nicaragua (Balsevich et al., 2005 and 2006) and other producers in Guatemala (Church, 2005; Reardon et al., 2005) and Mexico (Berdegué et al., 2006). The field work for this case study has also verified the participation of numerous small farmers in the Hortifruti network. It has also identified many poor farmers who have been able to participate through producer groups. It seems that the producers taking part in this

process do possess some special **endowments** of skills, attitudes and experience, but many of them have participated without any prior access to **formal** credit.

Indeed, in several instances, producer entry into the new value chains has been gained as a result of proven experience in growing specific crops, developed under conditions of **self-financing**. This refers to two financial mechanisms commonly used among credit-constrained farmers, both large and small. On the one hand, it refers to the use of the producer's own accumulated **savings** or of funds received from friends and relatives (including informal loans, gifts, and remittances), which are the outcome of their own savings efforts.

An expansion of safe and convenient facilities for **deposits** and money transfers, which promote the accumulation of savings and allow remittances, will be critical in assisting the implementation of this first type of self-financing, in order to allow entry into the new value chains and the funding of business expansion.

On the other hand, self-financing can also be accomplished with carefully planned and staggered planting and harvesting schedules, which provide the needed cash flows, at the appropriate moment, and which make possible the funding of the next crop cycle. This is possible only when there is a steady demand for the product, such as with the supermarket demand for fresh fruits and vegetables. Sustainable and high-quality sources of technical assistance are critical in allowing these planning efforts, while a secure market is needed to make the steady cash flows possible. **Liquidity management** matters, then, as it facilitates the cash flows needed to engage in this second type of self-financing. Prompt and reliable receipts of deferred payments from the buyer play a critical role in this cash flow management.

Thus, accumulated savings, informal transfers, and careful liquidity management can allow extended households to invest their own resources in the upgrading needed for participation in the new value chains. Efficient and sustainable financial services, other than credit, facilitate these self-financing efforts and support the successful entry by small and medium producers. These other services, however, are not typically offered by suppliers and other traditional actors in value chains. They require the presence of **financial intermediaries**.

Box 1 – The promise and limits of self-financing

In Nicaragua, a farmer saved for seven years to buy a basic irrigation kit. He needed the irrigation kit in order to sustain the year-round production demanded by Hortifruti and other institutional buyers. While he had access to the in-kind inputs needed to plant and harvest, which he obtained on credit from an input supplier, he did not have his own funds or the access to credit to purchase the equipment. He wanted to make this investment when the buyers first approached him about selling on a steadier basis. To fill his orders year round, he could not count only on rain. Because of his discipline and dedication, he finally saved enough to purchase the irrigation equipment, and he is now a regular supplier to Hortifruti. This has proven to be quite profitable. However, if he initially had access to medium to long-term credit to finance at least part of the equipment, he could have begun to take advantage of these market opportunities years earlier, thereby increasing the welfare of his household substantially. Cases such as this demonstrate both the benefits and the limits of self-financing in small-scale agriculture. One question is how the farmer could have built and signaled his creditworthiness to potential lenders, who might have financed the purchase of this equipment based on the promising marketing relationship with Hortifruti. Another question is the role that deposit facilities might have played in making the accumulation of the saved funds he needed less risky and less costly.

Moreover, when the farmers' incomes are low, the amounts saved are also small, and it may take a long time to accumulate the funds needed for a particular investment. Even though self-financing eventually makes the desired investment possible, it will materialize sooner when there is access to

credit (see the true story observed by the researchers in Nicaragua, in Box 1). The inevitable postponement, when the farmer is credit constrained, reduces welfare.

In general, the barriers to entry related to finance are higher when participation depends on large **indivisible** investments (large, compared to the producer's initial wealth – for example, greenhouses or irrigation equipment) as well as when the production technology shows rapidly increasing **returns to scale**, such that much larger output levels are needed to reduce unit costs to competitive levels. Many of the fresh fruits and vegetables demanded by supermarket chains do not exhibit these characteristics, however, and in these particular cases profitable opportunities actually exist for small and medium producers.

Once entry into the contractual relationship has been gained, the financial **dynamics** of the process usually allow these producers at least those who do not experience unusually adverse shocks continued involvement in the relationship, at least at their current levels of participation, even without access to formal credit. Especially when the relationship is accompanied by expert technical assistance – as is the case with Hortifruti – the producers learn to stagger their production and thus finance new cycles with the proceeds from the earlier cycles. The revolving cash flows that emerge may not be sufficient, however, for additional investments in improving productive capacity, such as irrigation systems and greenhouses (Chalmers, 2005a). Reliance on the accumulation of savings to self-finance these further investments may introduce excessive delays in the adoption of the new practices, as shown by the story in Box 1.

These considerations suggest that a demand for longer-term **investment** credit, provided in most countries only by financial intermediaries, may grow out of the new procurement arrangements. Moreover, the additional creditworthiness required to access these longer-term funds may evolve as a **by-product** of the expanded contractual relationship with the new institutional buyer.

The adoption of the new practices and the accompanying investments are risky. Too much **risk aversion** on the part of the producer may have the same delaying effects on the expansion of these productivity-enhancing efforts as credit constraints may have. This reluctance may be reduced, nevertheless, with access to safe and convenient facilities to keep **precautionary savings** in the form of liquid (financial) assets or access to **emergency credit** and other financial tools for **consumption smoothing** and reserve accumulation, including remittances. Moreover, the wide range of products handled by supermarket chains offers opportunities for **diversification** as a tool for risk management, which are not available within product-specific value chains either.

Lessons from the Central American experience with coffee growers are useful in illustrating the losses for rural households that lack adequate instruments to manage risk (Gonzalez-Vega, Rodríguez-Meza, Southgate and Maldonado, 2004; Vakis, Krueger and Mason, 2004). The reluctance to innovate and invest may be reduced, even more effectively than with credit, with the development of **insurance** markets, such as those that offer indexed contracts and, in this fashion, avoid the adverse selection and moral hazard problems that have plagued crop insurance (Miranda and Glauber, 1997; Skees, Hazell and Miranda, 1999).

In turn, greater ability to mitigate the consequences of adverse shocks further increases the creditworthiness of the producers. Indeed, during the field research for the case study, both the managers of supermarket chains and potential formal lenders highlighted the absence of adequate insurance programs as a major barrier to further expansion of these linkages. The development of sustainable insurance markets encounters, unfortunately, most of the same obstacles that thwart the emergence of financial transactions in the rural areas.

More importantly, to be able to participate in the new arrangements, the producers must possess specific **endowments** of skills, experience, and attitudes, in addition to specific factors of production.

Not many producers possess these endowments. To help small and medium producers gain the technical knowledge required to meet the requirements of the supermarket chains, some of the new retailers and their centralized institutional buyers have taken innovative steps, including the provision of **technical assistance** and market intelligence to those producers either linked to them in a long-term relationship or that demonstrate high potential. Government, donor, and NGO programs have also attempted to develop producer capacity to respond to these opportunities (Chalmers, 2005b). When successful, such business development services can also enhance creditworthiness, by improving the producers' profitability and thus their capacity to repay.

3.3 TRADITIONAL AND EMERGING VIEWS ON INTERLINKED TRANSACTIONS

Interlinked credit transactions are not new in the rural areas of developing countries. Any transaction is said to be **interlinked** when the prices of two products or services such as the interest rate and other terms and conditions of a loan, on the one hand, and the price and quality requirements of the produce to be delivered, on the other are determined simultaneously and when the agreement to buy (acquire) or sell (provide) one product or service is conditioned upon the agreement to buy or sell the other (Basu, 1995). In many low-income countries, interlinked contracts with traders, processors, exporters, and other actors along specific value chains provide the bulk of the credit used by small and medium agricultural producers (Shepherd, 2004).

“Traders and contract farming firms typically contract to market or process a farmer's harvest in exchange for credit and often other services like technical assistance and farm input sales” (Conning and Udry, 2005, p.10). The loan often involves not more collateral than a crop pledge, but it requires heavy and costly monitoring. In the normal course of their activities, however, product buyers acquire knowledge of the farmer and the crop technology and, in monitoring quality standards on delivered produce, they economize on the costs of monitoring loan performance, through the resulting **economies of scope**. Moreover, the use of the trader's own funds creates compatible incentives for a close monitoring of the borrower's activities.

There are two views on such linkages. The **buyer/supplier-direct credit** perspective on interlinked transactions has been that buyers “reduce the production and operational risks associated with lending to farmers by linking credit to the provision of technical advice (such as on input use or on what crop variety to grow to meet market demands) or timely delivery of appropriate inputs (seed, fertilizer) or by building relationships with farmers over one or more years. Many also tie credit to subsequent sales of produce... Operating costs for providing credit can be low, because credit is built into crop purchase and input supply transactions with farmers, for which agribusinesses may have existing physical infrastructure (such as warehouses), agents, processing facilities, information technology systems, farmer networks, and market knowledge” (Christen and Pearce, 2005, p. 22).

In **contract farming**, a more advanced variation of such interlinked transactions, repayment is deducted when the farmer delivers the produce. “Tobacco and seed companies, coffee and sugar mills, dairies and slaughterhouses, cotton boards, and even wholesale buyers for supermarkets have developed packages that combine elements of technical assistance, input provision, marketing assistance, price guarantees, and finance as a way of ensuring the supply of a sufficient quantity and quality of a particular product. By building formal contractual relationships with farmers, contract farming... reduces the risk that farmers will side-sell a portion of the contracted amount to other buyers” (Christen and Pearce, 2005, p. 22). According to this buyer/supplier-direct credit perspective, the interlinked transaction facilitates the supply of credit (often in kind) to the farmer, with the advances/loans being granted with funds from the other party in the contract (that is, with funds from one of the actors along the value chain).

Several advantages and disadvantages for the lender and the borrower of interlinked credit transactions such as those listed by Christen and Pearce above have been extensively studied in the literature (Bell, 1988; Basu, 1995; Bardhan and Udry, 1999). In general, interlinked transactions help to solve some of the information, incentive and contract enforcement problems found in rural financial markets.

Further, the transaction costs involved may also be lowered for both parties, through the economies of scope that result from being able to engage in more than one transaction with the same party and at the same location. From the supplier-direct credit perspective, these interlinked transactions have been associated with **informal** rural arrangements (between trader-lenders and farmer-borrowers, for example) or to vertical market structures for specific **commodities**, for which well-developed institutional marketing channels exist, such as tea, coffee, sugar, cotton, and tobacco (Rodriguez Meza, 2003). In typical cases, the range of financial services that are supplied along these vertical chains (only during the cycle of production) is, however, quite narrow – only credit, only during the cycle of production, and typically at short terms to maturity.

Moreover, although several documents have claimed that similar supplies of credit are forthcoming from **supermarket** chains, the current case study has found that such instances are very much an exception, at least in the three Central American countries studied. Typically, supermarket chains are not **suppliers** of credit, in this traditional sense. Hortifruti, in particular, has not been a supplier of credit except under extremely limited circumstances.⁷ On the contrary, frequently it is the farmers who finance other actors, up the chain, including the stores that sell their produce, by accepting **deferred payments** on their sales. What the field work for the case study found, however, is that the institutional buyers associated with supermarket chains make payments after a shorter period (usually between one and two weeks from receipt of the produce), compared to the traditional wholesalers (which usually pay after 30 days or more). In special cases, Hortifruti and other institutional buyers have been willing to make payments within even shorter periods (a few days).

Moreover, in the case of Hortifruti, such payments are **certain** and **reliable** (in that the organization has never failed to make the payment within the agreed upon period and that it is expected never to fail to do so). In contrast, this certainty and reliability have not always been associated, in Central America, with farmer linkages with informal traders and sales to traditional wholesalers. One important element of uncertainty and risk is removed, therefore, in the relationship with the supermarket chain. The field work suggests that small and medium producers value this certainty greatly. Clearly, the elimination of this risk of null or delayed payment further improves creditworthiness with formal lenders.

Furthermore, in the case of Hortifruti, weekly payments are deposited into a bank account – in some cases opened with assistance from the institutional buyer. This contributes to the creation of a bank **relationship** for the producer, which may also lead to increased creditworthiness in the future.

An **emerging and novel** perspective on these interlinked relationships suggested by the findings of the current case study is that the development of linkages with the supermarket chain can indeed (and to some degree already does) lead to an increase in the supply of credit for the participating small and medium agricultural producers. This occurs, however, because the explicit or implicit **contract** with the centralized institutional buyer, in many of its valuable dimensions, improves the **creditworthiness** of the producer in the eyes of financial intermediaries. No direct credit is involved.

⁷ Hortifruti has provided direct advances only in special cases, in which a new product is needed and Hortifruti is the only source of the new variety of seeds. In these cases, Hortifruti has provided the seeds on credit and has lent additional capital to encourage farmers to grow these risky new varieties, in order to ensure supply.

This enhancement of the producer's creditworthiness takes place along several of the **channels** suggested in the conceptual framework developed earlier in this document and in the discussion of interlinked transactions in this section. Moreover, funding, in this case, does not come from some other actor along the value chain; rather, it comes from **outside** the chain, being provided by several types of financial intermediaries. The signals that resolve the information problem for the lender come from relationships along the value chain; thus, the financial intermediary leverages the strengths of the value-chain relationship. Moreover, these intermediaries offer additional kinds of financial services, which also contribute to the rural household's welfare.

This novel emerging perspective of the influence of interlinked transactions on rural **financial deepening** highlights some of the advantages of the new contractual mechanisms. Some of these advantages arise from the nature of the supermarket experience in Central America and elsewhere. This is a very dynamic sector, in rapid expansion. In its entirety the chain is, therefore, a **deficit** sector, and it should be attracting resources from elsewhere in the economy (that is, from outside the chain), in order to allow for the expansion of its own activities. It is not a *surplus* sector and, therefore, it cannot be a **net** supplier of credit to others. Within the chain, in the aggregate its actors are credit-constrained.

In contrast, the traditional types of interlinked transactions require one actor along the single-product chain to finance the other. In this way, during the period of the loan, these arrangements increase liquidity for some actors within the chain, while reducing it for others. From this perspective, they are closer to a zero-sum transaction within the chain.⁸ Instead, when funds are mobilized as a result of financial intermediation and obtained from outside the chain, they allow an increase of the **overall command** over resources available to all of the participants in the particular value chain. In this sense, from the perspective of the given chain, the new arrangement is more of a positive-sum transaction.

When there is financial intermediation, as a cluster all the actors along any value chain can enjoy a greater amount of liquidity. Therefore, the chain itself can expand more rapidly than when it must only rely on its own internal resources. Moreover, in some sectors a few specific actors are sometimes able to attract funds from outside the chain. This usually gives them additional **bargaining power** in their dealings with other actors along the chain. Thus, for example, a processor that offers advances to those producers willing to sell their crop only to this particular firm most likely has received a bank loan. Without this additional liquidity, the processor would not command as much market power. If the producers gained access to credit in their own right, this power could be counterbalanced.

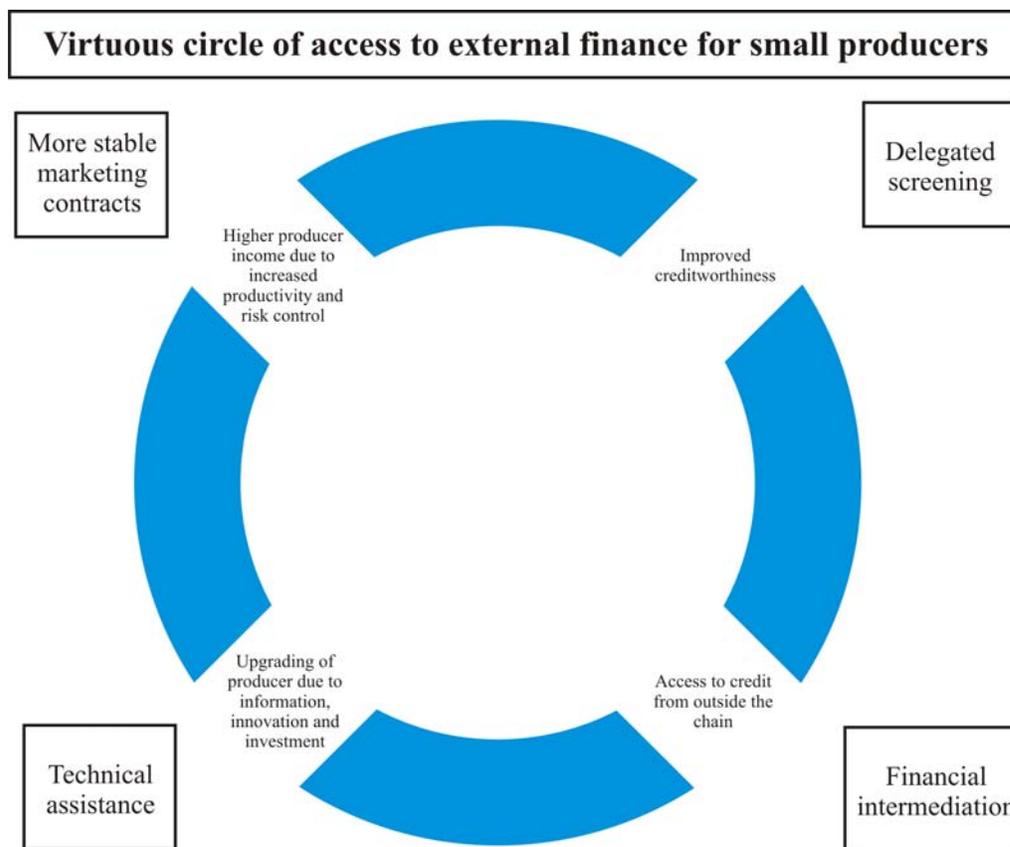
Actors such as this processor, however, have a finite capacity for getting into debt and, thus, face a choice. The advances to the producers reduce their overall liquidity. They would usually prefer, therefore, that the farmers fund their own production elsewhere. Supermarkets, in particular, require liquidity all year round and expect to attract funds from outside the chain to finance their rapid expansion. To grant loans to producers, in these circumstances, would limit their own ability to expand, including investing in new stores or packing plants. If the enhanced creditworthiness of the producers, due to the new contractual linkages, allows them to get their loans elsewhere, the entire chain gains.

⁸ From a welfare perspective, the transaction is actually a positive-sum game. Even though the additional liquidity acquired by one of the actors is surrendered by another one, they both increase their welfare by engaging in a valuable intertemporal exchange. No additional command over resources is provided, however, for the chain as a whole. Resources are simply **redistributed** among its members, according to their intertemporal demands and supplies. When funds come from outside the chain, all actors gain without anyone enjoying less liquidity.

The final outcome of these processes is a **virtuous circle**, from the perspective of the producers, of the value chain as a whole, and of the financial intermediaries. First, there is a virtuous circle from the perspective of small and medium producers. Greater access to credit from outside the value chain, facilitated by their enhanced creditworthiness, along with business development services, allow the participating agricultural producers – albeit a select group among the rural population – to take advantage of the new productive opportunities created by the expansion of value added along the chain. This participation results in higher and more stable incomes for these producers. This is a consequence of the better terms and greater stability of the purchasing contracts that they receive. These two elements (higher profitability and more reliable markets) are crucial to closing this virtuous circle, by improving the creditworthiness of the producers in the eyes of financial intermediaries further.

The connections along this virtuous circle are shown in Graph 1. The producer’s core **creditworthiness** (depicted at the top right) is increased by the higher income that, in turn, results from the improved **productivity** typically associated with participation in the value chain as well as by the smaller uncertainty associated with a guaranteed access to a market throughout the year (top left). In addition, the producer’s revealed/verified creditworthiness is enhanced by the implicit delegation of screening and the signaling that goes along with the contractual relationship. When there are financial intermediaries in the area of operation of the producer, the improvements in overall, effective creditworthiness materialize as increased **access** to credit (bottom right).

GRAPH 1



Access to external loan funds and to other financial services assists the producer in financing various types of investments and encourages additional innovation (as depicted at the bottom left). This **upgrading** of the producer’s capabilities is enhanced with market information flows and technical

assistance provided by the institutional buyer or alternative sources of business development services. Further improvements in productivity follow, in a positive spiral.

Second, from the perspective of the entire value chain, financial intermediation services provided from outside the chain increase the ability of the actors inside the chain to obtain the resources they need in their productive activities. This allows them to invest and upgrade, and it increases their **competitiveness**, which in turn attracts additional resources to the sector. Several actors along the chain, which in the traditional single-crop model of interlinked transactions were expected to supply credit to the farmers, can now channel their talent and attention, in addition to their funds, to the marketing areas where they possess pronounced comparative or competitive **advantages**. This creates value for all the participants along the chain.

Third, from the perspective of financial intermediaries, the development of the virtual circle allows them to use their own comparative advantages in assessing risk, evaluating and monitoring entrepreneurs, and pooling funds from small and large savers to finance the activities of several actors along the value chain (King and Levine, 2000). They can use the signaling from several actors in the value chain to their advantage. The transaction costs involved should be lower, given the opportunity that these intermediaries have to diversify their portfolio, generate economies of scale and economies of scope, as they are more able to dilute their fixed costs, and implement lending technologies in a professional fashion (Gonzalez-Vega, 2003a). This, in turn, will allow these intermediaries to offer a broader menu of services that expands the frontier in a cost-effective fashion.

Moreover, because of the existing linkages between the institutional buyers and the farmers, financial intermediaries can reduce their costs of lending by implicitly **delegating** some of the **screening** functions to the institutional buyers. Financial intermediaries can rely on the resulting **signals**, because **compatible incentives** emerge in this situation. That is, the institutional buyer and the financial intermediary are both interested in the success of the participating farmers, and they will invest resources in making sure that this is the case.

In addition to creating a win-win relationship, these linkages among farmers, value chain actors, and financial intermediaries take advantages of the strengths of each. The supermarket chain and its institutional buyer specialize in what they know how to do best, namely their retailing and wholesaling functions, while the financial institutions specialize in intermediating funds and managing risk. Moreover, as the **pool** of potential borrowers improves, with the increased productivity and higher value added that arise from the technical assistance and business development services provided by the institutional buyers, the profits of the financial intermediary improve.

The additional profits allow the intermediary to consider an expansion of its own supply of financial services in this segment of the market. This, indirectly, benefits other small and medium agricultural producers, not yet involved in the modern value chain. The increased supply of financial services, in particular the provision of deposit facilities in rural areas, eases the future entry of new producers into these arrangements. Those producers who already are involved in contractual relationships with the institutional buyer also benefit from the broader supply of financial services, which go beyond those that a traditional single-crop value chain can supply on its own.

In summary, the emergence and gradual dominance of retailing by supermarket chains is already a fact of life in several Central American countries. For some small and medium agricultural producers, linkages to the emerging modern value chains offer an opportunity to increase and stabilize their incomes and to pull themselves out of poverty.

Not all households currently involved in farming, however, possess the required **endowments** of assets, skills and attitudes, while those who possess these endowments may not be able to use them fully, given their credit constraints. The challenge, therefore, is how to integrate more small producers

into these value chains by facilitating their access to the package of skills, information, and financial services required. The strengthening of financial intermediaries should be a critical component of this strategy.

The purpose of this case study is to identify ways in which some of these farmers need not be excluded from these options because of the rural lag in financial development. In order to test these ideas, the document next proposes two hypotheses. The two approaches are not necessarily mutually exclusive. In actual practice, they may **complement** each other. One purpose of the case study, therefore, is to assess their relative importance in Central America.

3.4 TWO HYPOTHESES FOR THE CASE STUDY

The traditional view on interlinked transactions suggests that supermarket chains, as several other agribusinesses and marketing actors, have advantages in engaging in credit transactions with the agricultural producers that supply them with primary products. This is the view of the supermarket chain as a **direct source** of credit for farmers. In contrast, the emerging novel view developed here considers the contractual linkages with these chains as **triggers and enhancers** of creditworthiness. The impact on the farmers' access to credit of their participation in the modern value chain is, in this case, **powerful but indirect**.

This alternative approach to offering financial services to small and medium producers has advantages. Efficient and sustainable financial **intermediaries**, able to offer a broad range of financial services, at competitive costs, allow a more complete expansion of the frontier of rural finance. They can pool funds from other sectors of the economy, diversify their portfolios, and offer services beyond credit. Value chains based on a single product, in contrast, cannot cope with **systemic** shocks that affect the entire sector and have difficulties in mobilizing internal resources for long-term investment. Access to credit from outside the chain may also improve the **bargaining power** of small and medium producers. Interlinked credit transactions reduce **transparency** about either the effective prices paid for the goods or the effective interest rates charged, and this may significantly reduce the producers' market power – that is, their ability to demand better terms from the transaction.

Interlinked transactions may still play important roles in getting credit to small farmers. Given the proximity of the lender/traders to the farmers, their transaction costs are low, and they are not constrained by the prudence that is demanded from financial intermediaries that mobilize deposits. These transactions are thus important components of the supply of agricultural finance in the rural areas.

The discussion of empirical results, to be examined next, attempts to shed some light on two possible hypotheses about the role of value chains in increasing creditworthiness. The **first hypothesis** is that the supermarket uses its information, incentive and contract enforcement advantages to lend to its farm suppliers and that this credit relationship gradually allows the farmer to gain increased access to other sources of funds and, in particular, financial intermediaries. Increased access to credit thus takes place in two steps.

In such a scenario, in the first step, participation in the new market chain, per se, creates **direct** access to credit. That is, the supermarket agrees to finance the producer's activities in order to secure him or her as a reliable supplier. The producer thus gains access to loans or advances on the crop while, at the same time, engaging in a selling-purchasing contractual agreement and other linkages with the institutional buyer.

Within the same scenario, in a second step, the development of a credit relationship between the supermarket chain and the producer generates information about repayment, and it creates a

reputation for the producer – in effect, it builds a formal or informal *credit history*. This credit history can be made *portable*, and it can then be used in demonstrating creditworthiness to other lenders. That is, the *private information* about repayment behavior that has been accumulated by the institutional buyer can be made available to other lenders – in particular, financial intermediaries external to the value chain. The information about the farmer’s reliability in delivering the produce can also allow the institutional buyer to issue references to potential lenders, but the hypothesis here relates to information on the **performance of loans** from the buyer.

This transmission of information may be **explicit** (through credit references or reports to a credit rating agency) or it may be **implicit** (as it allows the producer to signal to others – for example, by showing cancelled amortization receipts – that it has successfully borrowed from the supermarket chain). Implicitly, this record as a borrower from the supermarket means that the producer has demonstrated ability to repay. When this is the case, the producer/borrower can *graduate* to the services of a more complete financial intermediary. This is called the **graduation hypothesis**.

The second hypothesis is that the producer’s complex **contractual relationship** with the institutional buyer and, in particular, both the effect of the business development services provided by the buyer on the productivity achieved by the farmer as well as the steadier and more reliable access to the market –guaranteed by the implicit contract –can contribute to the **creation and enhancement** of creditworthiness.

The assumption here is that financial intermediaries external to the value chain can incorporate, in their screening efforts, documented or simply observed information about the producer’s contractual relationship with the supermarket chain as well as the producer’s newly acquired skills. This is called the **signaling hypothesis**.

The following section describes Hortifruti’s corporate structure and purchasing arrangements as well as the design of the field work undertaken in order to test these hypotheses. It then presents the results from the observations.

4. HORTIFRUTI IN CENTRAL AMERICA

Hortifruti, the institutional buyer selected for this case study, belongs to a consortium built around a supermarket chain, as will be described below. In turn, Hortifruti is composed of three closely related but separate firms, which together constitute the “Agriculture Division” of the *Corporación de Compañías Agroindustriales* (Corporation of Agro-industrial Companies –CCA). These three firms are “Hortifruti Produce,” which specializes in the procurement and distribution of fresh fruits and vegetables, “Hortifruti Grain”, with similar functions for basic grains (mostly beans and rice), and “Provée Food Service,” which supplies produce, meat and other staples to large institutional buyers, such as hotels, restaurants, hospitals, cruise ships and the like.⁹ In this section, the document illustrates the role – both in triggering and in enhancing creditworthiness – played by the explicit or implicit contractual arrangements that Hortifruti has developed with numerous small and medium agricultural producers, in the three countries where it has operated.

⁹ For additional and current information on CCA, consult the website <http://www.cca.co.cr>. In addition to the Agriculture Division, basically Hortifruti, the CCA comprises a Meats Division, which includes Industrias Cárnicas Integradas (meat), Granja Agrícola Ricura (poultry), and Pescarnes (seafood), as well as a Commercial Division, represented by Desarrollo Comercial Internacional, which develops private labels, and an Industrial Division, which includes Panificadora Mas X Menos (bakery) and Alimentos Naturales (cereals and health products).

The *Corporación Más X Menos*, owned by a group of Costa Rican investors, had been operating a chain of supermarkets and some complementary businesses for several decades when, in 1997, the corporation was divided into three separate holding companies, namely:

- a. *Corporación de Supermercados Unidos (CSU)*, a holding company that now manages a large **retailing** chain, incorporating various types of supermarkets and similar stores;¹⁰
- b. *Corporación Servivalores*, which provides real estate, transportation, factoring and other **financial** services – including credit card agreements for consumers – to the group and related enterprises, and
- c. *Corporación de Compañías Agroindustriales (CCA)*, the holding company that accounts for the agro-industrial arm of interest in this study.

The CCA is in charge of the procurement of grains and fresh fruits and vegetables as well as the production and/or packing and preparing of several food items. To accomplish these tasks, the CCA has been divided into four groups of several separate companies each, called **divisions**. The three companies that constitute Hortifruti – as described above – conform one of these divisions and are specialized in the procurement of agricultural products.

The purpose for creating the four divisions of CCA was to supply, in a more efficient fashion, agricultural products to the pool of stores of the CSU supermarket chain. By creating independent management teams and individualized **profit centers**, the separation of the – still closely connected – components was expected to increase efficiency and spur profits and to prepare the group for the potentially fierce domestic and international competition that rapidly emerged.

A new approach to retailing had actually been introduced in Costa Rica in 1960, when *Más X Menos S.A.* was created by Mr. Enrique Uribe Pagés. A visionary, this entrepreneur pioneered the concept of self-service stores, thereby launching the rapid process of supermarketization described earlier. Given a higher income per capita and larger middle class than its other Central American neighbors, Costa Rica was ready for the transformation in retailing patterns that had rapidly emerged in richer countries.

In addition to the traditional *Más X Menos* supermarket chain, focused on middle class consumers, stores for lower income households (called *Palí*) were introduced in 1979, at the start of the macroeconomic crisis in Costa Rica. This new type of store democratized supermarkets and brought them into poor neighborhoods and small towns, even in rural areas. While the chain of *Palí* was a response to low-income consumer demands for a discount store that would offer a narrower and cheaper range of products, a third type (namely, the mega store *Hiper Más*, at the other end of the spectrum) was created in 1998, followed by the large volume discount store *Maxi Bodega* (2001). In turn, the growing procurement efforts for the numerous retail stores were gradually delegated to affiliated companies, including *Hortifruti, S.A.* A similar process of expansion took place in Guatemala, where the business activities of the Paiz family led to the emergence of *La Fragua* and its chain of several types of stores.

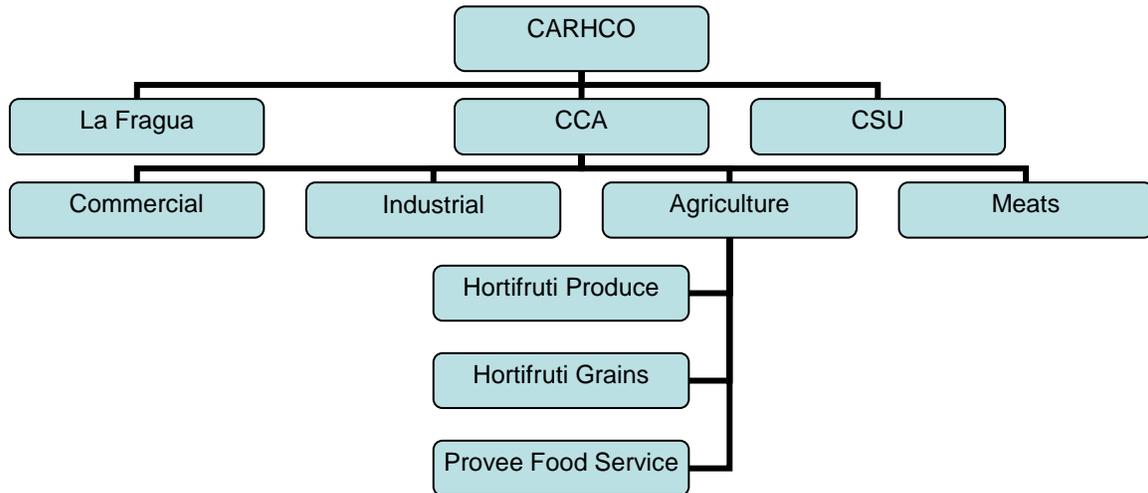
Eventually, in 2001, the Central American Retail Holding Company (**CARHCO**) was established. This conglomerate incorporated – with equal participation in the stock of shares, as a result of a swap – the two largest retail chains in Central America, one based in Costa Rica (*Corporación de Supermercados Unidos –CSU*) and the other one in Guatemala (*La Fragua*), in addition to the

¹⁰ For additional and current information, consult the website <http://www.csu.co.cr>.

strategic partner Royal Ahold, an international supermarket operator based in The Netherlands, with over 9,500 supermarkets around the world.¹¹

The position of the CCA and its four divisions, including Hortifruti as one of these divisions, in the structure of the new multinational corporation is shown in Graph 2.

GRAPH 2. ORGANIZATIONAL STRUCTURE OF THE CARHCO HOLDING COMPANIES.



The merger that led to the creation of CARHCO brought about the largest chain of retailing stores in Central America (and one of the largest in Latin America), with 363 sales points by mid-2005, annual sales of US\$ 2 billion, and 22,550 employees. Within the group, the CSU mainly operates supermarkets in Costa Rica and Nicaragua, while La Fragua mainly operates supermarkets in Guatemala, El Salvador and Honduras.

In September of 2005, **Wal-Mart** purchased the one-third participation that Royal Ahold had owned in the group. The Dutch partner had encountered financial problems in 2003, and it had begun to pull out of Latin America. Finally, by April of 2006, Wal-Mart completed the acquisition of 51 percent of the stock in the holding company. The Costa Rican management team will continue to be in charge of the Central American operations.

The new strategic partner is the largest retailer in the world and the largest food retailer in the US, with global retail sales of US\$ 285.2 billion in the fiscal year ending January of 2005. It operates 3,800 stores in the US, where it accounts for 7 percent of all retail sales, and 2,400 stores in other countries (Argentina, Brazil, Canada, China, Germany, Japan, Mexico, South Korea and the United Kingdom, in addition now to the Central American countries). It has 1.7 million employees worldwide and its 1.2 million employees make it the second largest employer next to the Government in the US (Basker, 2005; Irwin and Clark, 2006). In 2004, its purchases for US\$ 18 billion from China represented 10 percent of US imports from this country (Basker and Van, 2006).

¹¹ The retailing market is very concentrated in Central America. CARHCO, itself, controls around 70 percent of the supermarket sector in Guatemala, 65 percent in Nicaragua, 63 percent in Costa Rica, 55 percent in El Salvador, and it shares the market with rival La Colonia, in Honduras.

The purchase of a majority holding in CARHCO has been a first step in efforts to expand Wal-Mart's operations in Central America, in recognition of the potential of the region, particularly after the CAFTA-DR.¹² As a complement to this investment, the opening of new stores is expected in the future. The presence of Wal-Mart may further change the patterns of procurement of this and other retailing chains, and this may bring new **threats and opportunities** for small and medium agricultural producers in Central America. These producers will have a better chance to succeed in the new environment if they gain access to financial services from **outside** the chain – which will likely be their only option, as the bulk of funding is unlikely to come from the supermarket chains themselves. That is, potential participants in the expanding value chains will have a better chance if the rural lag in financial **intermediation** is reduced in their respective countries. While direct credit from the supermarket chains is unlikely, the contractual relationships of these producers with the new institutional buyers can be enlisted to assist in making this expanded access to financial services possible.

In addition, if the entry into this market of retailers such as Wal-Mart brought about further **concentration** of supermarket ownership, there is a potential threat of reduced competition at the procurement level (Irwin and Clark, 2006). Thus, while the economies of scale and economies of scope generated by this concentration may lead to more rapid rates of growth of both domestic sales and exports and, thereby, could increase overall opportunities for small and medium agricultural producers, small farmers in particular could lose **bargaining power**, as the supermarket chains would no longer need to fight over reliable producers. This would allow the institutional buyers to enjoy greater market power in their relationships with the producers. This loss of bargaining power would be greater if the small farmers have to rely on the supermarket chain for their loans and other financial services. This possibility highlights the importance of developing financial intermediaries not linked to the value chain.

4.1 A SPECIALIZED INSTITUTIONAL BUYER

Hortifruti and the other divisions of the CCA are the suppliers for the network of retailing stores associated with the two formerly rival chains (CSU and La Fragua), in all five countries, but Hortifruti has processing plants in only three of these countries (Costa Rica, Nicaragua and Honduras).

Thus, through **shared institutional suppliers** of fresh fruits and vegetables, grains, and other products, the new multinational network of retail stores has allowed the development – within the group – of **intraregional trade**, across the Central American countries.¹³ In addition, the CCA imports, into the region, fruits not locally produced. This intraregional trade has already been a **spring board** for exports outside the region, particularly from Costa Rica. There have been similar experiences in Honduras, facilitated by the USAID-sponsored CDA/Fintrac program (Chalmers, 2005b).

¹² Wal-Mart has also been developing a large supermarket chain in **Mexico**, building on the opportunities created by NAFTA. At the Fourth National Microfinance Meeting, organized by PRONAFIM in Querétaro, Mexico, in October of 2005, managers of the innovative private commercial bank, **BANORTE**, claimed that – in their loan analyses – they are seriously taking into consideration, as a signal of creditworthiness, the potential that a secured market represents for the 360,000 suppliers of Wal-Mart. These bankers also highlighted the bank's interest in similar value chains, as this institution rapidly expands its microfinance portfolio (Sescosse, 2005). This is an explicit and important example of the influence of supermarkets on the expansion of creditworthiness, through the channels discussed here, involving small and medium producers in Mexico that, in contrast to Costa Rica, so far have enjoyed little access to bank credit. The potential impact is quite large.

¹³ Within this regional agricultural network, in 2004, an international movement of 6,500 tons of produce required 465 containers of basic grains, fresh fruits, traditional vegetables, and high-value vegetables.

During the field work for the case study, numerous small producers in Costa Rica expressed their willingness to become exporters and their hope that their relationship with Hortifruti would make this leap possible. The generalized expectation is that the **CAFTA-DR** will bring additional opportunities, not only for exports to the United States, but also through a reduction of non-tariff trade barriers that still exist among the Central American countries.

The establishment of the CCA holding company in Costa Rica was built on the success of *Hortifruti S.A.*, an affiliate that had been created in 1972, as an institutional buyer to supply the then *Más X Menos* supermarket chain. The notion for the design of Hortifruti had emerged from the difficulties that the group had encountered with the traditional system of procurement of fresh fruits and vegetables through independent wholesalers. In addition to Hortifruti, the new CCA holding company included several other firms, already within the *Más X Menos* sphere, specialized in the procurement, processing, packing, and distribution of meat (beef and pork), poultry, eggs, fish and seafood, bread, and organic health foods. Moreover, under its pioneering umbrella, as early as 20 years ago, the conglomerate developed a **private label**, and it began focusing on **food safety**, taking particular advantage of shifting consumer demands for healthier food in Costa Rica.

The CCA began operations in two plants in Nicaragua in 1998 (from 1994 to 1998, the chain procured directly from Costa Rica) and in Honduras in 2001.

4.2 HORTIFRUTI'S CONTRACTUAL RELATIONSHIPS

The case study focuses on the Agriculture Division of Hortifruti, which is the leading seller – and importer – of these products in Central America. The division has three components. The fruits and vegetables activities of “Hortifruti Produce” are the oldest. This unit has developed a large number of value added products, ready-to-eat, ready-to-heat, and ready-to-cook. In turn, the marketing activities of “Hortifruti Grain” began in 1995. “Provée” further contributes to the generation of economies of scale and economies of scope in procurement and distribution and to the diversification of the institutional buyer’s clientele.

The design of the concept and establishment of an institutional buyer was a response to the procurement problems that the supermarket chain had encountered in its earlier days, as a result of the geographic dispersion, low productivity, and limited logistic capacity of farmers. Yields were low and unstable, post-harvest losses were high, product quality was not uniform, and supply could not be traced to specific farmers, whose capacity to deliver was very weak (Cavallini, 2004). Since the early 1970s, the *Más X Menos* Corporation experimented with various methods to address these problems. Hortifruti introduced the *Tierra Fértil* (Fertile Land) program in 1979, to assist in the development of a **reliable supply** and in the transformation of small and medium peasant agricultural producers into **modern entrepreneurs**.

Costa Rica’s better educated consumers gradually drove CSU into meeting demands for better quality and more diversity (Barrantes et al., 1998). While CSU has been taking about two-thirds of the supermarket sales in Costa Rica, competition with other chains has been fierce (Quirós, 2005).¹⁴ To improve efficiency and meet consumer demands, the country’s other supermarket chains have rapidly moved towards new procurement and marketing practices (Alvarado and Kiuppsy, 2002). This suggests that a **demonstration** effect is occurring, by which other chains are copying the success of CSU’s drive to raise standards. The results of this case study apply to the contractual linkages also

¹⁴ Economists describe markets where there are few players but where competition is intense as **contestable**, in contrast to perfect competition, which requires a very large number of participants. Contestability ensures that the exercise of market power is not abusive.

developed with their preferred suppliers by other supermarket chains, beyond Hortifruti, as confirmed by additional research (Quirós, 2005).

Thus, to guarantee the best quality products that the consumers now seek and that competitiveness demands, Hortifruti has gradually developed a bundle of **relationships** with small and medium local producers, to whom the corporation typically supplies with quality seed and packing materials as well as with some technical assistance during sowing, harvesting, and post-harvest activities. These are the institutional buyer's preferred suppliers whose creditworthiness has been enhanced.

The accomplishment of these purposes has reflected a successful capacity-development and negotiation model of outsourcing with small and large enterprises (both producers and *maquiladoras*) which, under strict production processes, control systems, and compliance with hygiene standards, produce and deliver the products to Hortifruti, on time and meeting all of the requirements. The emphasis has been on enhancing the ability of the value chain to handle large volumes while maintaining quality standards.

Moreover, in competing for customers, these supermarkets have used new **information** systems to track consumer purchases and have followed new marketing concepts, such as optimal use of sales space and product category management. The resulting information and management advantages have strengthened the position of the supermarket chains as wholesale buyers. "No one knows better {than the retailer} what happens to the product on the supermarket shelf. And it is not easy for the supplier to gain this information" (Montero, 2001). For the farmer, one of the most valuable dimensions of the relationship with the supermarket chain is the direct transmission of this information, critical for efficient production planning.

These market trends have resulted in the adoption of two strategies on the part of CARHCO. First, the group created a closely affiliated institutional buyer, namely Hortifruti. Second, Hortifruti has developed long-term, **sustainable relationships** with carefully selected **preferred suppliers**.

In most cases, there are **no formal written contracts**. Instead, the continuation of a mutually beneficial and stable relationship over time has resulted in an informal or implicit contractual arrangement. Hortifruti typically agrees on **flexible implicit contracts**, but somewhat more formal contracts are sometimes issued. Most of the times, the producers prefer flexible arrangements. Nevertheless, *de facto*, all of these contracts **guarantee a purchase**, under certain conditions. Participating farmers interviewed during the field work apparently value this implicit contract greatly (they view it as an **intangible asset**), but they do not feel much need for additional formalization of the agreement.

Among other attributes, the farmers value the promise of comparatively **stable prices** and of a **guaranteed market**, at net prices that are somewhat above (although not always) wholesale market prices, in addition to some expert and free technical assistance and market information. Indeed, the free delivery of these other components of the contract actually increases the **effective price** received by the farmer.

As a component of its marketing strategies, the supermarket chain has established quality **standards by category**, and these are applied on its behalf by the institutional buyer _Hortifruti_ and its network of producer/suppliers. The standards refer to appearance, degree of development, cleanliness, physical aspect, color, damage from insects or disease or equipment, water content, smell, texture, firmness, ripeness, as well as size and tolerance to packing. Additional standards of **traceability**, to improve food safety, have also been implemented. Indeed, according to CCA officials, the Hortifruti products are controlled from the farm itself, through technical recommendations and microbiological analyses of irrigation and rinsing water as well as agrochemical analyses for residuals. A bar code is assigned

for each farmer's produce, to allow traceability. To facilitate handling according to food safety standards, the farmers can buy packing materials, at preferential prices, from Hortifruti.

The purpose of these efforts has been to ensure compliance with strict privately-developed food safety and quality standards (equivalent to those adopted by EUROPGAP, FDA, and CODEX Alimentarius). Hortifruti takes samples from specific crops and tests them, in house or in government and private laboratories. This care has earned Hortifruti several food safety certifications, and the approach has prepared the corporation for the sanitary and phytosanitary (SPS) requirements for exports beyond Central America.

Depending on the country and on the circumstances, to achieve the desired results Hortifruti has taken on some **agricultural extension** functions, mostly through the activities of its **field buyers**, who are agronomists, including frequent field visits, advice and agreements on production schedules, and pest-control and cost-control interventions. This essentially assured the continuity of product delivery and the effectiveness of the two-way **information flows**, to spot and resolve problems in a timely manner (Alvarado and Kiuppsy, 2002). To stimulate exceptional performance, the best producers are offered incentives and prizes. In particular, consistently good performance in delivery is explicitly rewarded.

In summary, to implement this modern approach, Hortifruti has been working closely with a pool of **preferred** growers. By the end of 2005, Hortifruti was working with about 1,650 preferred suppliers in Costa Rica (up from 1,200 at the end of 2004), 550 in Nicaragua (up from 300), and 350 in Honduras (up from 300). Hortifruti estimates that, at a given moment, about 4,500 families in Costa Rica, 1,500 in Nicaragua, and 900 in Honduras are involved directly or through other producers. The influence of this mechanism goes well beyond the numbers in the core pool of suppliers. First, preferred suppliers include many **associations**, so the numbers of farming households involved in the processes of upgrading and modernization are substantially higher. Given the rapid expansion of the supermarket sector, many more small and medium producers could be incorporated in the future via any one of the competing chains. While the numbers are significant, they also suggest limits to the potential outreach of these mechanisms.

Second, Hortifruti sometimes purchases – on a seasonal basis – from other growers, with whom it maintains less close ties, and many preferred suppliers complement their own volume up to what they are expected to deliver to Hortifruti with **side purchases** from their neighbors, if these other producers can meet Hortifruti's quality standards. Third, particularly with basic grains, the farmers deliver to processors or *maquiladoras*, which then process and package the grains, according to the specifications of the institutional buyer and frequently under the supermarket's private brand. Thus, demonstration effects have been important. In addition to specific **technical assistance** interventions, these implicit contracts stipulate a production **calendar**, the volumes required at each date, and the standards of quality demanded. The calendar allows the farmers to **stagger** their production, so their planting and harvesting coincides with the dates and amounts of the purchase agreements.

This, in turn, allows the farmers to **plan** ahead, use their own income to invest, and diversify their crops in order to reduce their vulnerability to changes in market preferences and conditions. In the case of well-prepared farmers, Hortifruti has strongly encouraged and assisted in this **diversification**. Because the supermarkets' demand is sustained over the whole year, this **continuity** of demand helps to stabilize the farmers' income and facilitates the consumption smoothing efforts of the farmer's household.

Hortifruti thus engages in training and **technical assistance** efforts, the intensity and focus of which depends on the country. A long-term vision is behind such an approach: the institutional buyer is supporting its own bottom line by investing in an assured source of quality and quantity produce. This, in turn, also helps the farmers in making a steady **transition** to the more strict quality and safety standards required.

All of these non-financial services, to increase productivity and promote **business development**, contribute to the continuing learning of the small and medium agricultural producers. The outcome is a steady upgrading of the farmers' productive capacity and entrepreneurial skills, of the sort required for poverty alleviation and rural growth (Dunn, 2005). In the process, additional demands for credit and other financial services emerge, which the supermarket chain is not willing or is not prepared to address. Increased access to the services of sustainable financial intermediaries may help, therefore, to accelerate this process of transformation.

Furthermore, Hortifruti has used the extensive network of suppliers to test and experiment with the introduction of new products, especially for the top-end stores where customers expect diversity, innovation, and quality (Alvarado and Kiuassy, 2002). An interesting **innovation** has been the production of mini-vegetables and fresh-cuts for the food service sector as well as the development of organic products.

There is an interesting **sybiotic** relationship here in using small producers in such trials. On the one hand, the institutional buyer can diversify the risks of the trial and error efforts associated with the innovations and spread the experiments across a pool of numerous small growers. This allows for controlled experiments. On the other hand, the producers with the requisite technical capacity can focus on learning the production technology for the new crops, without having to worry much about the existence of a market that guarantees their sales. Both parties should be more willing, therefore, to embark on the technological changes that are associated with higher value products and rapid productivity growth.

Indeed, the implicit contractual relationship between the small and medium agricultural producers and an institutional buyer that works closely with them reduces the farmers' **market risk**.

The arrangement assures that the farmer has a buyer (that is, it reduces risk about **volume** sold), willing to pay within some expected price range (that is, it reduces **price** risk), and able to make payment with certainty after a short period (that is, it reduces **payment** risk). Moreover, the information exchanges between the parties in the relationship mean that the producers can internalize the requirements of the buyer. For this reason, the risks and costs of **rejection** of produce that does not meet the standards can be minimized.

At the same time, the **monitoring** costs of the institutional buyer are lower when there is an established relationship (Berdegué et al., 2003). In turn, by developing a long-term procurement arrangement, with bundled technical assistance, the supermarket reduces the risk of coming up short on a given item as well as the risk of receiving an inferior product. These **risk-reducing** efforts increase the supermarket chain's ability to offer attractive contracts to the participating small and medium agricultural producers. Per the following quotation of the statement by a Central American entrepreneur, "small farmers suffer great instability regarding market conditions for their production. For many of them, planting does not guarantee they will sell their produce, selling does not guarantee they will obtain a good price, and a good price does not guarantee they will be paid promptly or in full" (Bate, 2005).

The implicit contract with the supermarket chain attenuates or eliminates several of these risks. Potential **lenders**, in turn, know about and fear the consequences of these risks on the producers' ability to repay. A reduction of such risks should encourage, therefore, not only innovation by the small and medium producers but also additional lending to them. Access to external funding allows the producers to take advantage of the new opportunities sooner than later.

As suggested earlier, the institutional buyer has strong incentives to minimize its search risks and transaction costs, by reducing the **turnover** in the pool of growers with whom it develops implicit contracts. For this purpose, the institutional buyer must develop an effective **screening** and

monitoring system. Despite major progress in this direction, in some countries Hortifruti still experiences a high rate of farmer attrition from less reliable producers that come and go. At the same time, Hortifruti has enlisted the assistance of some preferred growers to assemble produce from neighboring farmers, if they meet the standards.

This implicit **delegation** of the sorting and procurement of certain commodities saves Hortifruti some search costs, while the preferred producers that deliver to Hortifruti have incentives to carefully select and closely monitor their “partners”. The preferred producers are still responsible for meeting quality standards, and they suffer damage to their reputation as well as costly product rejections and potential exclusion when standards are not met. Farmers that consistently do not meet the standards are actually turned out of the pool.

A positive externality is created here, as modern agricultural technologies are adopted by additional farmers who do not have direct contract with Hortifruti. This is another component of the ongoing process of upgrading of small and medium producers associated with the expansion of this approach.

Thus, two important types of positive **externalities** are generated by these contractual arrangements. On the one hand, demonstration effects about farming practices and quality control influence the performance of other farmers, not in the pool of preferred suppliers. This is a **positive externality in production**. This externality matters for rural development, because about 70 percent of the agricultural suppliers of the supermarket chains are **small** farmers, producing mostly leafy greens for which there are few economies of scale (Berdegué et al., 2003). This implies that the continued growth of this sector has the potential to expand opportunities for small farmers beyond what it already has. Although there are some barriers to entry into the preferred pool, especially for specific crops, these are not insurmountable. The final outcome is a trend of rising yields and quality, not only among the preferred suppliers but also in a larger **area of influence**.

On the other hand, the information generated by the **screening and monitoring** system used by the institutional buyer – Hortifruti – to identify preferred growers can be used by other market participants, including potential lenders. The resulting **signals** thus also generate a positive externality toward the financial market. This externality allows potential lenders to operate as if they had delegated some of their screening and monitoring functions to the institutional buyer, in order to reduce their own costs. This should lead to an expansion in the supply of credit and other financial services to the participating farmers and beyond. This effect corresponds to the creditworthiness triggering and enhancing role of supermarkets identified in this case study. The two types of externalities, in production and in financial intermediation, reinforce each other in a virtuous circle.

4.3 TECHNICAL ASSISTANCE PACKAGE

By promoting standards of quality, a steady supply, and ambitious innovations, Hortifruti has established a valuable **bridge** between small and medium agricultural producers and final consumers, with benefits for all participants.

In Costa Rica, where these efforts have been in place longer and are more advanced, the **technical assistance** initiatives of Hortifruti have included advice on farming practices, both specific, such as new production techniques for tomatoes, as well as valuable generic advice with long-term implications: the rational use of chemical inputs, pest control, hygiene and food safety standards, post-harvest techniques, and supply management.

Control in the use of water for the irrigation of crops was launched in 1988, while a training campaign for cholera prevention was needed in 1992. Well-defined standards of quality were introduced in 1989. The control of rinsing water and microbiological analyses followed in 2001. Since 1990, the

technical assistance program has also encouraged a number of innovations. Value has been added with the promotion of organic products, natural juices, and fresh salad cuts. The use of micro-tunnels was initiated in 1995, while greenhouses followed in 1997.

Hortifruti has engaged, in these efforts, actors from the private and public sectors, including input suppliers (to encourage a responsible use of chemical inputs), universities (to stimulate and adopt research on new practices and crop varieties), and extension agents. In Nicaragua, these alliances have involved several NGOs, such as TechnoServe, ADRA and Save the Children (Balsevich et al., 2005). In Honduras, substantial technical assistance on production and business opportunities has been provided through the CDA/Fintrac program (Chalmers, 2005b; Medlicott, 2005).

Moreover, Hortifruti itself has adopted numerous innovations, in order to improve the handling of the produce during transit and once it arrives at the processing plant and is delivered to the supermarket shelves. In Costa Rica and Honduras, the producers bring their crops from the farm to the Hortifruti processing plant or to the *maquiladora*. In contrast, in Nicaragua, where the majority of participating producers are apparently too poor to own trucks, Hortifruti has established several collection points closer to the farms. Among the most important innovations introduced are the management of products in plastic baskets, right from the farm, to protect both quality and hygiene. Clean trucks, thermo-isolated (in urban areas) and with refrigeration (in rural areas), are used for the exclusive transportation of fruits and vegetables. Quality control and grade selection, upon receipt of the produce at the plant, are standard, while statistical sampling at the processing plant and laboratory tests are used to identify unacceptable microbiological and chemical residuals.

There are important differences across the three countries, in terms of the technical assistance offered to producers. Costa Rican farmers no longer need technical assistance on basic farming practices. The core set of the preferred suppliers in Costa Rica, while still comprising small or medium producers (some of whom are quite poor), are better-educated farmers than in the other two countries, with more experience in modern agriculture. In this country, Hortifruti's technical assistance has focused on food safety and post-harvest handling. In Honduras and particularly in Nicaragua, in contrast, basic technical assistance on how to plant and on pest control has been required (Cavallini, 2004). In Nicaragua, some of this technical assistance has been provided, free of charge, by several NGOs, an approach that has allowed the entry of a larger number of poor farmers but that has also raised some questions among Hortifruti officers about the long-term **sustainability** of these efforts.

In Honduras, some of the participating farmers have been working with the USAID-funded program of the *Centro de Desarrollo de Agronegocios* (CDA, Agribusiness Development Center). This program has emphasized the transfer of modern production, post-harvest handling, and processing technologies as well as the dissemination of information about business opportunities. CDA's strategy has been to demonstrate to private actors, such as Hortifruti, other buyers and processors and even input suppliers, that investing in the upgrading of small producers is a viable long-term business strategy. In the case of farmers linked to Hortifruti, these efforts were extremely successful. CDA was able to gradually transfer responsibility for this assistance to the Hortifruti agronomists and other private buyers and input suppliers. (Chalmers, 2005b).

5. HORTIFRUTI AND ACCESS TO CREDIT: FIELD RESULTS

The accelerated expansion of modern and highly innovative value chains, the introduction of more demanding standards of quality for food, in general, and fresh fruits and vegetables, in particular, and the associated transformation of procurement practices and distribution channels – developed around supermarkets – have had important implications for the degree and manner of access to credit and other financial services by the small and medium agricultural producers linked to these chains. The potential influence of this supermarket revolution on rural financial deepening is substantial.

In earlier sections, this document developed a conceptual framework for the analysis of the **reciprocal** influences between value chains and formal financial intermediaries. Further, section 4 described key features of Hortifruti, the institutional buyer selected for the case study. This section presents the most salient results from the researchers' first attempt to evaluate the **hypotheses** that emerged from this new conceptual framework. These hypotheses are predictions about the comparative importance of **direct and indirect** influences that a contractual relationship with a supermarket chain has on the farmers' financial history. The evaluation of the hypotheses is based on **interviews** with Hortifruti officials, from the top management to its agronomists/buying agents in the three countries, representatives of financial institutions and NGOs, and participating farmers. There is much heterogeneity among these producers, and observable characteristics, such as farm size or level of education vary substantially within the samples. Location (low transaction costs) and the possession of specific skills, experience and attitudes seem to be stronger determinants of participation.

Prior to a discussion of the set of relevant field observations, the section highlights a few key differences in country **environments** that may have a bearing on the results observed. Next, it briefly describes the profiles of the participating farmers and the nature of their contractual relationships with Hortifruti, including the influence attributed to these linkages on their productive opportunities and on the risks the farmers face. The section also explores the financial experience of the farmers interviewed, and it derives inferences about potential impacts of the contractual relationship with Hortifruti on their creditworthiness and their access to credit and other financial services.

5.1 DIFFERENCES IN COUNTRY ENVIRONMENT

There are important differences among the three countries where Hortifruti's operations were observed. Because of these differences, in particular those in terms of rural development and financial sector depth, relevant **comparisons** may shed some light on the degree to which policy frameworks and other environmental factors may influence the nature and extent of the actual impacts, _ on rural financial markets _ of the changes in procurement systems associated with supermarket chains.

TABLE 1: KEY COUNTRY FEATURES. COSTA RICA, HONDURAS AND NICARAGUA.

	Costa Rica	Honduras	Nicaragua
Population (million)	4.1	7.1	5.6
Population growth (%)	1.9	2.3	2.4
Population density (per squared Km)	84.7	64.7	44.1
Urban population (%)	61.7	46.4	58.1
Gross Domestic Product (million US\$)	18,395	7,317	4,353
GDP per capita (US\$)	4,670	1,030	790
GDP per capita (PPP)	9,490	2,658	2,523
Poverty (% population)	22.0	53.0	47.9
Income inequality (Gini)	46.5	55.0	55.1
Agriculture (% GDP)	8.4	13.4	18.0
Agriculture (% labor force)	19.1	29.9	18.5

	Costa Rica	Honduras	Nicaragua
Human Development Index (UNDP)	0.83	0.67	0.67
Literacy (% adults)	95.8	80.0	76.7
Life expectancy (years)	78.1	68.9	69.5
Health-adjusted life expectancy (years)	67.2	58.4	61.4

Source: *Earthtrends*, World Resources Institute, several years. <http://www.wri.org>

To illustrate differences in relevant factors, Table 1 shows basic statistical indicators about the three countries during the early years of this century. Key differences notwithstanding, there exist fundamental **similarities** among these Central American nations and many of their features are shared by numerous other developing countries. The three (Costa Rica, Honduras and Nicaragua) are very small, very **open** economies, and the United States is their most important trade partner. Since the early 1960s, international trade within the region was promoted by the Central American Common Market, but trade beyond the region has always been the most important determinant of the levels and stability of per capita incomes. Openness, measured by the ratio of their exports plus imports to their GDP has been above 75 percent for these three countries. Recently, earnings from tourism and remittances from migrants abroad have been added to commodity trade as major sources of foreign exchange. In 2005, the Central American countries and the Dominican Republic jointly negotiated a free trade agreement with the United States (known as CAFTA-DR), which is being gradually ratified by the countries involved.

The three countries have been highly vulnerable to changes in international market conditions and to natural disasters. Recent examples include sharp reductions in international coffee prices and increases in oil prices as well as droughts (El Niño), hurricanes and earthquakes. At both the aggregate and the household levels, the tools for **risk** management are few and the capacity to respond to adverse shocks is very limited. Remittances from abroad offset the effects of systemic shocks, in particular because they can break the covariance among the outcomes across domestic economic agents who are simultaneously impacted by these shocks (Pleitez, 2004). While limited, the effectiveness of risk management is quite varied among the three countries. A risky environment typically reduces the farmers' willingness to innovate.

The three countries have made substantial progress, although at quite a different pace, towards the **diversification** of their exports, away from traditional commodities (bananas, coffee, cotton, sugar), with Costa Rica having most successfully taken advantage of the opportunities offered, since the mid-1980s, by the Caribbean Basin Initiative and its own unilateral trade liberalization to develop a broad range of non-traditional exports, both agricultural and non-agricultural (Monge-Gonzalez, Loría-Sagot and Gonzalez-Vega, 2004).

At a different pace, as well, these countries have been experiencing a process of deep **structural transformation**. Indeed, the relative importance of agriculture has declined in all three economies. The sharpest transformation has taken place in Costa Rica, where 19 percent of the labor force is now in agriculture and where only 8.4 percent of the GDP is generated by the primary agricultural sector. Once food processing and other agro-industrial activities are considered as part of the "extended agricultural sector", however, the share of agriculture in the total GDP is over 30 percent. Furthermore, the lower proportion of the value added in agriculture to the total GDP observed in Costa Rica in part reflects the increasing productivity and dynamic growth of numerous agribusiness

and non-agricultural sectors, many of them spurred by the more attractive opportunities to export that emerged after the commercial policy reforms of the mid-1980s.

The three countries differ in terms of their **rurality**. Almost two-fifths of the population (38 percent) still lives in the rural areas of Costa Rica, where a large number of profitable food processing and non-agricultural opportunities have continuously emerged (Gonzalez-Vega et al., 2003). The proportion of the rural population in the total is higher in Nicaragua (42 percent) and much higher in Honduras (54 percent). This has been changing rapidly, however, as the absence of opportunities in the rural areas of these two countries has caused high rates of **migration** away from the countryside. The nature of these opportunities influences the rural demand for financial services in each one of the countries. Differences in the productivity of labor and in productive opportunities among these countries reflect, in turn, differences in stocks of human capital, infrastructure, institutions, experience with modern agriculture, and access to markets.

Other differences also matter. Although Costa Rica has the smallest population, it has the highest **density** of population, and it generates the largest Gross Domestic Product (GDP), as shown in Table 1. The GDP of Honduras is about two-fifths and in Nicaragua it is less than one-quarter of the GDP of Costa Rica. These differences are even greater when comparing per capita GDP. When measured according to Purchasing Power Parity, per capita GDP is about one-fourth in the other two countries, compared to Costa Rica. Moreover, per capita GDP has been growing faster in Costa Rica, in part because of a lower rate of population growth. Furthermore, as indicated by Gini coefficients, the distribution of income is least concentrated in Costa Rica and most concentrated in Nicaragua. The incidence of **poverty** is much less in Costa Rica (22 percent of the population) than in Nicaragua (48 percent) and Honduras (53 percent). Honduras and Nicaragua are by most indicators the poorest countries in Central America, even when compared to Guatemala and El Salvador.

Similar contrasts are obtained when comparing key social indicators, such as literacy rates and life expectancy, as shown in Table 1. The contrasts are also reflected by differences in the Human Development Indexes shown in Table 1. These factors shape the expansion of supermarkets and their influence on finance. They are robust indicators of standards of living and of the relative importance of the middle class and are, therefore, good proxies for the demand of high quality food, the influence of education on the customers' concern for health and food safety, the readiness of small and medium agricultural producers to adopt innovations, the extent of potential competition in the supermarket sector, and the overall rate of transformation in this sector.

5.2 DIFFERENCES IN FINANCIAL DEEPENING

There are important differences in the structure of the financial market and in the experience of rural financial intermediaries in each country as well. The main hypothesis developed here is that both the core and the revealed creditworthiness of a producer can be enhanced by the relationship that he or she develops with the institutional buyer, but that there is still a need for this creditworthiness to be recognized/identified by the lender. This identification rests on the efficacy of the existing **lending technologies** to assess ability and willingness to repay and on the organizational capacity, corporate culture, and robustness of the financial organizations that undertake this task.

While **legitimate demands** for financial services escalate with the presence of an institutional buyer that purchases on behalf of the supermarket chain, there will not always be an adequate **supply response**. When the capacity or the interest to respond is not there, the influence of value chain relationships on finance will be less important than is theoretically expected here. There are substantial differences in the ability and interest of various types of financial intermediaries in the three countries to accomplish these purposes.

In particular, the observed differences of the extent to which the relationship with Hortifruti has influenced the farmers' credit histories in the three countries are explained, in part, by differences in each country's financial market and not just by the different behavior of Hortifruti in each location.

The financial systems of the three countries are markedly different. There are 19 banks in Costa Rica, with assets of about US\$ 10 billion at the end of 2004. Several large state-owned banks still weight heavily in the system, although the new private commercial banks have been better prepared and more willing to fund innovations in agriculture, and thus their share of the market has been expanding. One would expect that these banks will be eager to take advantage of the new opportunities that emerge from the enhanced creditworthiness of the upgraded small and medium agricultural producers (Gonzalez-Vega et al., 2003).

The breadth of outreach of rural credit in Costa Rica has been quite substantial, in part as a result of the *Juntas Rurales* program of the *Banco Nacional de Costa Rica*, which has been operating, with different degrees of success, since 1914 (Gonzalez-Vega, 1973). While there are positive and negative aspects to the heavy presence of the state-owned banks, their widespread outreach in the rural areas contrasts sharply with the experiences of other Central American countries, where the state-owned development banks have failed to achieve any significant outreach and where, in several cases, these banks have frequently collapsed. In Costa Rica, in addition, a few successful financial cooperatives, in particular Cooquique, have offered various types of financial services in areas where the Hortifruti growers operate (Quirós, 2005). In contrast, financial NGOs, except perhaps for FINCA/Costa Rica, have had a very limited presence, if any, in this country (Quirós and Gonzalez-Vega, 2006).

There are 16 banks in Honduras, with assets of about US\$ 5.3 billion, as of the end of 2004. There is a state-owned agricultural development bank, BANADESA, which has collapsed several times during its history and which has only achieved limited outreach. Severe political intrusion in financial markets, including recent legislation for the pardoning of loans, has seriously deteriorated the country's culture of repayment. This also explains, in part, why private commercial banks have been recently pulling out of the rural areas, where the supply of financial services has not been sustainable. Moreover, significant problems with property rights have limited the farmers' ability to offer their land as collateral. There are also important regulatory asymmetries in Honduras, which penalize those financial intermediaries willing to offer their services in the rural areas, even when the associated risks are not necessarily excessive.

There have been, nevertheless, important innovations in microfinance. A number of financial NGOs, gathered under the second-tier umbrella of Fundación Covelo, have increased access to credit for microentrepreneurs, but few have had significant operations in the rural areas and almost none has lent for agricultural purposes (Falk, Quirós and Gonzalez-Vega, 2005).

Several banks and microfinance organizations, with the support of USAID-RED (the successor project to CDA), have begun to examine the prospect of adapting their credit procedures to lend to small producers, on a pilot basis. Clearly, legitimate demands for credit exist in the rural areas of this country, but the political economy of credit markets has blocked the further expansion of supply.

There are six banks in Nicaragua, with assets of about US\$ 2.3 billion, as of the end of 2004. Again, issues about the uncertain definition and enforcement of property rights have limited the ability of formal financial intermediaries to expand their outreach in the rural areas. As in Honduras, the mismanagement and eventual collapse in 1998 of the state-owned development bank, BANADES, resulted in even less rural outreach than had previously existed, and it left a decidedly negative legacy in terms of repayment culture. The presence of financial NGOs is greatest in this country, compared to Costa Rica and Honduras, but only a few have developed sustainable operations. With a few exceptions, moreover, sustainable microfinance organizations have also stayed out of rural areas and

in particular of agricultural lending. One of the few exceptions has been *Fondo de Crédito Rural*, an NGO developed by the Catholic University which shows a strong rural outreach. Recently proposed legislation has attempted, albeit with limited success, to introduce a framework of prudential regulation and supervision for microfinance. Although there is much debate about the adequate final design of these interventions, there is substantial scope for an expansion of the frontier of microfinance into the rural areas of Nicaragua.

5.3 HORTIFRUTI'S COUNTRY-SPECIFIC STRATEGIES

The diverse strategies adopted by Hortifruti in each one of the three countries where it has operated are explained, in part, by four key country differences. First, these differences have reflected the degree of **supermarketization** in each country. Actually, supermarkets in all Central American countries have spread from a small niche at the end of the 1980s, focused on rich consumers in the capital cities, to gradually penetrate intermediate cities and towns and poorer neighborhoods and to establish, at least in some of the countries, a recent presence in small towns and rural areas (Berdegue et al., 2003). The speed of expansion has been correlated with **per capita income**, level of education and other socioeconomic features, being fastest in Costa Rica and slowest in Nicaragua and Honduras, even when compared to Guatemala or El Salvador.

Second, there are important differences in the degree of **readiness** of small and medium agricultural producers in these countries for the adoption of the innovations implicit in the contractual relationship with the supermarket chains. Producer readiness – and the degree of support that is needed from Hortifruti and other instances of technical assistance – matter greatly; this suggests how much emphasis should be put on upgrading the farmers' ability to participate.

In part, these unequal degrees of readiness reflect differences in the stocks of **human capital** available in the rural areas and in the development of each country's physical and institutional infrastructure. They also reflect the length of **experience** that the farming sector in each country has had with modern agriculture. Costa Rica has been experiencing a more rapid expansion of non-traditional agricultural exports; hence, after barriers to trade were lifted in the mid-1980s, farmers in this country have generally participated or have observed their neighbors participate in several new and modern modes of production (Monge-Gonzalez, Gonzalez-Vega and Monge-Ariño, 2004).

These differences have required important **adjustments** in the technical assistance package offered by Hortifruti, in contrast to what was described – mostly for Costa Rica – in the earlier section. These country differences have also implied significant distinctions in the institutional buyer's ambition to develop a complex contractual relationship with a network of preferred suppliers, independently of their size. Thus, while in Costa Rica some of the producer relationships with Hortifruti are already three decades old, few of these relationships are more than three years old in the other two countries. This implies that, in Costa Rica, there is already a well-defined relationship with the farmers included in the pool of preferred suppliers – although the list continues to grow and to change, particularly as new crops are added. In the other two countries, in contrast, search costs are still high for the institutional buyer, the expectations of farmer turnover are greater, and the definition of contract terms is less precise. In general, in the other two countries there is less **trust** between the parties and robust **reputations** have not been built yet. This has been due, in part, to differences in country context and, in part, to the length of time Hortifruti has been working in each country.

Third, differences in the nature of the relationships with farmers that Hortifruti has developed in the three countries may also be related to the existing supply of alternative sources of technical assistance and business development services. In Costa Rica, with few options for providing advanced training in quality standards, pest management and post-harvest handling, tailored to the requirements of

Hortifruti, the researchers observed a close and intense campaign of technical assistance by the institutional buyer. For its success in these efforts, Hortifruti relied on the deeper stocks of human capital available in the rural areas of this country and on the generalized background on farming practices accumulated during decades of effective public and private technical assistance services.

In Nicaragua, Hortifruti preferred to **partner** with NGOs already on the ground and already assisting small producers, to help them meet quality standards. In circumstances such as these, the institutional buyer faces a trade-off between the reduction in its own technical assistance costs and the loss of advantages from a closer relationship with the producers. The question of the sustainability of the NGO efforts also becomes a concern for the institutional buyer.

In Honduras, Hortifruti relied on CDA to assist the producers, but it stepped in to provide many of these services after the realization that CDA would no longer be able to do so, because the USAID funding was ending. Thus, Hortifruti made business decisions about the extent of its direct technical assistance efforts in each of the three countries based on a combination of factors: the existence and nature of alternative sources of expert advice, the time and extent of presence in country, and the existing level of skills and knowledge of the farmers.

5.4 FIELD WORK

The case study has attempted a preliminary exploration of the influence of the new procurement arrangements associated with supermarket chains on the triggering and enhancing of creditworthiness among small and medium agricultural producers. The impressionistic observations made during the field work shed much light on valuable lessons from this Central American experience. The scope and limitations of these observations are reported next.

During the design stage, the intention was to gather information that would make it possible to **control** for at least two types of differences, relevant for the interpretation of results. First, given the broad range of crops involved (e.g., multiple fresh fruits and vegetables, grains, exotic foods and others) and given the different features associated with the producers of these crops (namely their size, location, production and marketing experience, financial history, and level of technology used), the researchers wanted to understand the various ways in which **product** characteristics and **producer** features influenced the creation and expansion of creditworthiness associated with the new contractual arrangements.

During the field work, the researchers discovered a range of **heterogeneity** among the producers far greater than was expected, both across countries and within each one of them, particularly in Costa Rica. Because numerous features are relevant for the analysis and because these features showed up in multiple combinations, each producer interviewed actually became a **case** in its own right.¹⁵

In the present case study, one important implication of the heterogeneity found among the producers interviewed is that the preconditions for participation in the new procurement arrangements may not

¹⁵ The data do not offer sufficient degrees of freedom for **statistical inferences**. The case study reveals, however, a rich set of **stylized facts** and potential lessons. The researchers are persuaded that their inferences depict well the actual experience and offer sufficient ground for recommendations. Additional research that could control for some of these features would be extremely valuable. Additional methodological challenges would have to be addressed in any econometric analysis. These are mostly related to the possibility of **selection bias**. That is, producers who seek participation in the Hortifruti program would not have the features of a randomly chosen sample. They are not representative of the populations of these countries. Rather, they have either approached Hortifruti or have been selected by the field buyers because they do possess unique attitudes and endowments of experience and other relevant features. These features also matter in a credit application. Moreover, there is **endogeneity** in the determination of the outcome of the farmer's productive activities, his access to credit, and the possibility of joining the preferred suppliers list. Rather than one explaining the other, these outcomes have to be explained simultaneously.

be related to the kinds of farmer **characteristics** that are traditionally recorded and that may be more easily observed, such as farm size, demographic features of the household, level of education of the head of the family and the like. Large and small, educated and uneducated farmers have joined the preferred suppliers' list.

This heterogeneity is consistent with the observations of other researchers interested in the influence of supermarkets, who have found that farm size and levels of education are not significant factors in explaining inclusion in modern supermarket chains (Berdegué et al., 2006). These researchers have found that space dimensions related to geography, such as the producer's location with respect to roads and markets, seem to be key determining factors in participation. This is also consistent with other studies that have emphasized the role of transaction costs in processes of modernization of the productive activities of poor rural populations (Lardé de Palomo, Gonzalez-Vega and Argüello de Morera, 2000).

Successful participation seems to be mostly related to **less easily observable** characteristics, such as the types of specific skills possessed, nature of earlier experience, **attitudes** towards attributes valued in modern production processes – such as timeliness, thoroughness, flexibility, precision and the like – as well as willingness to change habits and to innovate. These are the kinds of individual producer attributes that are observed by loan officers when a **non-standardized** lending technology (in contrast to the standardized information used in credit scoring) is employed by the lender, such as in microfinance best practices and other types of relationship banking (Joshi, 2005). In this case, their influence on participation in the value chain plays the role of a **signal** for the loan officer.

Furthermore, while an existing credit relationship may be important in overcoming barriers to entry into the modern value chain, access to even greater volumes of credit may depend on the observation – by the lender – of these less easily observable farmer features and of the **intangible** assets associated with the contractual linkages. These are precisely the farmer features evaluated by the supermarket buyer in looking for preferred suppliers. Formal financial intermediaries and other institutional lenders, however, may be too far removed from small and medium agricultural producers to be able to evaluate these individual attributes at a comparatively low cost. In contrast, such a fine-tuned **screening** ability is critical for the success of the operations of Hortifruti and similar supermarket chains. Once the **implicit** possession of these attributes and intangible assets has been **revealed** by the farmer's linkage to the institutional buyer, the prediction of our analysis is that the assessment of creditworthiness by regular financial intermediaries should become easier. Because these intangible characteristics are not easily observable by researchers and policymakers, the task of identifying determinants of successful participation is not easy either.

As a second methodological challenge, the original research design relied on the opportunity to observe these innovative mechanisms at work in three countries that are at different levels of rural and financial development. Controlling for the same institutional buyer (Hortifruti), this would allow for comparisons related to the country's stage of development and other environmental features, including the risks of climate shocks and the evolution of relevant macroeconomic variables. Nevertheless, as already discussed, Hortifruti has had to adapt its modus operandi to the particularities of each country.

During the field work, the researchers had the opportunity to collect **primary** information from several sources in the three countries. The method used involved interaction with four sets of actors:

- a. Hortifruti's officers at the headquarters in Costa Rica and in the two other countries, both those in managerial positions as well as field buyers,
- b. participant producers with implicit or explicit contracts with Hortifruti (but, unfortunately, not a control group of non-participants),

- c. key officers of financial intermediaries and other lenders in the area of influence of Hortifruti, and
- d. key officers of providers of non-financial services, particularly those NGOs and development projects that offer technical assistance to this segment of the rural population in Nicaragua and Honduras.

Semi-structured interviews with Hortifruti officers and materials collected at the organization's headquarters revealed the nature of the operation, the evolution over time of the volumes involved and of distinctive features of the contractual relationships, the organization's perceptions about its preferred suppliers, and some lessons from Hortifruti's earlier attempts to lend directly to farmers.

Because of logistical limitations, **random** samples of participant producers could not be drawn in each country. In Costa Rica, however, the researchers had access to a complete list of Hortifruti's current preferred growers. The sample of farmers interviewed was then independently selected by the researchers, but more in an effort to represent a broad variety of possible and interesting cases, throughout the country, rather than being drawn at random for its statistical properties. In the other two countries, representatives of Hortifruti took the researchers to a few locations, where they had an opportunity to freely interview participants. The producer descriptions that follow come from these interviews.

In several locations, various types of **lenders** were identified as actual or potential suppliers of financial services to the producers and they were interviewed, to determine to what extent they perceive that the relationship with the supermarket chain matters as a criterion of creditworthiness.

Finally, officers of a few third-party providers of non-financial **technical assistance** (in particular CDA, in Honduras) were interviewed, to understand perceptions about ways in which such assistance has impacted the growers' creditworthiness and to verify data regarding the growers' sources of credit. The multiplicity of actors interviewed made it possible, therefore, to cross check the information obtained from each one of the parties. The observations reported here reflect a high degree of consistency in the answers of the various respondents.

5.5 PRODUCER PROFILES AND INTERVIEW RESULTS IN COSTA RICA

Just as the macroeconomic profiles and financial sectors of the three countries differ significantly, so do the agricultural producers linked to Hortifruti in each country. The depth and accuracy of the data differ, however, by country. The information on grower profiles reported here comes from the farmers' own answers during the interviews.

In Costa Rica, interviews were conducted with 20 individual producers (in addition to five growers who served as pilot interviewees at the time of questionnaire development) and with officers of farmer associations, scattered throughout the country and selected from a list – provided by Hortifruti – of their current preferred suppliers. The schedule of interviews reflects the widely spread influence that Hortifruti has had in Costa Rica, with the potential for positive externalities and demonstration effects being experienced in different regions of the country.¹⁶ Indeed, the sample reflects the tremendous diversity of the pool of farmers involved.

While these farmers are quite educated, by developing-country standards, they are typical among the Costa Rican rural population. Clearly, the success of the Hortifruti mechanism in this country has, in

¹⁶ Of these, nine interviews took place in different locations in the *Meseta Central* (Central Valley), within a range of one to three hours on a paved highway from San Jose. Other interviews were conducted near the border with Nicaragua (Pavón) and near the border with Panama (Bri Bri). Some interviews took place in the Northwest section of the country (La Irma) and around the Nicoya Peninsula (Jicaral) as well as in the Southeast area of the country (Dota and Perez Zeledón).

part, reflected the presence of this stock of **human capital** in the rural areas. Of the 20 farmers interviewed, ten had completed primary education, seven had completed secondary education, and three had undertaken university studies, thus mimicking the overall distribution of schooling in the country. If the latter three are ignored, the average level of schooling for the rest of the farmers is seven years (it is nine for the country). In addition to the advantages that education offers for the adoption of technological innovations, these higher levels of schooling may also have been associated with a greater ability, in this country, for Hortifruti to work successfully through associations and to develop flexible contracts with its preferred suppliers.

There is no relationship between **farm size** and participation in the Hortifruti list. The area under cultivation ranges from 1.1 hectare to 375.0 hectares. On average, these farmers cultivate 9.3 hectares, and the median area is even smaller. Differences across crops must be kept in mind, as the value of the sales of produce from a given area of land differs significantly across high-value crops.

Moreover, not including the large producers of beans interviewed in Pavón (five cases), two-thirds of the growers in the sample (10 out of 15) indicated that one of the major influences of their relationship with Hortifruti has actually been an **increase** in the area under cultivation, in some cases even a three-fold increase. That is, their farms were even smaller when their relationship with Hortifruti began, in comparison to the size we observed now – influenced, in part, by the linkage itself. Therefore, size, *per se*, does not seem to be a significant factor in explaining a successful relationship.

Most of the farmers own their land, with clear **title**, with a few exceptions. It was significant, however, that three producers who did not own land at all had **rented** land in order to be able to work with Hortifruti. Also, all of the five producers of beans interviewed rented some land, in addition to cultivating their own, to be able to deliver the larger amounts demanded by Hortifruti. A flexible land market seems to favor, therefore, opportunities for the development of linkages with the institutional buyer. It is not clear if similar possibilities exist in the other two countries. In the case of one of the producer associations in Costa Rica, cultivation took place in a communal indigenous reservation.

Indeed, in this country, Hortifruti has developed strong alliances with several farmer **associations**. These have included (1) *Asofrul*, in the Nicoya Peninsula, comprised of 50-60 farmers specialized in the production of exotic tropical fruits, including guava and star fruit; (2) two associations of producers of citrus fruits (one of which groups 120-200 small producers, and another with a group of women orange processors); and (3) the *Asociación de Productores del Chirripó* (APPTA), with 2,000 indigenous members, of which 800-1,100 are producers of organic fruits, bananas and cacao for Hortifruti. All of these associations were visited by the researchers. Purchase agreements with several groups and associations have been particularly important in the case of beans: five producers were interviewed from the *Cámara de Granos Básicos de Los Chiles*.

The producers interviewed are from a recent cohort of preferred suppliers. On average, their relationship with Hortifruti was 4.3 years old. The **length** of this relationship ranged from less than one to 13 years. Despite this comparatively recent association, major changes have already transformed these farmers. Among the most prominent, there have been changes in the composition of the **portfolio of crops** produced by each one. In some cases, these changes have resulted in greater degrees of specialization; in other cases, they have led to greater diversification.

The interviews revealed that, as expected, in response to the extent of the demand from Hortifruti, some farmers have been able to **specialize** in producing a crop for which they possess pronounced comparative advantages. The associated contractual security has allowed these farmers to stop producing other less profitable crops, which had been cultivated only in order to lower the risks of their income-generating activities. That is, the contract has lowered the risk of specialization because

of the steadiness and reliability of the agreement with the institutional buyer. In other cases, the farmers have completely switched crops, to produce something that is highly demanded by Hortifruti. In other cases, the relationship has allowed the growers to further diversify their production. In most cases, Hortifruti has encouraged this **diversification**, both as a risk-management tool and because, once the field buyers have identified a star producer, they want to take advantage of his or her unique skills as agricultural entrepreneurs and thereby induce a more varied supply of products for which there may not be adequate levels of procurement.

The producers interviewed reported that, to facilitate the required innovation, in several instances Hortifruti has provided the seed for the production of new varieties and other critical inputs, sometimes on credit. In other cases, Hortifruti has facilitated arrangements with input suppliers. Although exclusivity is not strictly required, some growers have fully specialized in selling to Hortifruti. This concentration of their sales in only one buyer creates some risks, but the growers can always return to the open markets, if necessary.

Vegetable producers are among the most diversified. This reflects, in part, the higher production risks associated with these crops. Fruit producers are usually less diversified, given the attention required by their long-term investments. Combinations of dairy and vegetables are frequent in the *Meseta Central*. Dairy is attractive as a generator of regular cash flows. All the five growers of beans (who are more specialized and harvest larger areas of rented land), are also diversified into rice and tubers. The remaining 15 farmers produce, on average, about 8 different crops each, although some of these are closely related products or varieties of a given product. In several cases, organic varieties have been introduced, both as a diversification strategy and to increase value added.

According to the farmers interviewed, their **volume** of production has increased, in part because of the expanded area under cultivation, but mostly as a result of increased **productivity**. Moreover, given a steady demand from Hortifruti throughout the year, these farmers have been able to continue producing during times of the year when it was not traditional for them to produce. The advanced **scheduling** of purchases and the **staggering** of production allow the farmers to rationalize their plans for planting and to stabilize their volume of production. The demands from this steady schedule highlight the importance of irrigation equipment and/or greenhouse services, which in turn underscores the potentially important role that long-term investment credit could play in facilitating the entry of more such farmers into modern value chains.

Gross **incomes** have increased even more than farm output, as lower post-harvest losses and improvements in quality – accompanied by higher prices – have been the most salient impact of the relationship of these farmers with Hortifruti. Their own value added in these sales has increased, given the additional cleaning and sorting, as have also employment and their costs of production. In some cases the farmers sell smaller amounts at favorable prices to rival supermarket chains and, in other cases, when quality is not adequate for Hortifruti, they take the rejected portions to the traditional wholesalers and open markets.

There was no agreement, among the growers in the sample, about the impact of their relationship with Hortifruti on **prices**. In general, Hortifruti's prices seem to be similar to open market prices, but considerably less volatile – considerably higher in times of low open market prices and somewhat lower than open market prices when these prices are very high. Thus, by working within an implicit price band, Hortifruti de facto stabilizes the prices received by the growers. The price volatility characteristic of these products is sufficient, however, for the growers to prefer not to have a fixed price agreement with the institutional buyer, which would bind them to a low price when market prices are rising. Even though Hortifruti discourages side selling and the farmers have to deliver the amounts that they promised to sell to Hortifruti (or risk losing their preferred status), they seem to appreciate the ability to side sell some of their output – possibly by planting more than Hortifruti

would be willing to buy – when the price is high, while being covered by Hortifruti when the price is low. They particularly value the implicit price support, in the latter case.

Furthermore, as in any other interlinked transaction, there is no simple way to define prices in the case of these relationships. For example, one must add the value of the technical services provided for free, in order to compute **effective** prices for the grower. Hortifruti has also supplied specialized inputs, at lower than market prices.¹⁷ In general, this flexible arrangement seems to work well for both parties. The implicit contractual relationship requires, however, the grower's ability to **deliver** the amounts requested by Hortifruti and of an acceptable quality, sometimes at a short notice. Indeed, Hortifruti's major concern is not to come up short on quantity or quality at any given moment – and the institutional buyer is willing to pay for this certainty. At the same time, there is still sufficient competition from rival supermarket chains and even from some exporting firms to contain an excessive exercise of market power in Hortifruti's pricing policies.

5.6 PRODUCER PROFILES AND INTERVIEW RESULTS IN NICARAGUA AND HONDURAS

In Nicaragua and Honduras, the researchers did not have the opportunity as in Costa Rica to observe as broad a range of participating growers scattered throughout the country. This reflected, in part, constraints due to logistics and, in part, the less advanced stage of development of the Hortifruti network in these countries.

With a much shorter history in **Nicaragua** (since 1998), Hortifruti has been able to develop a less well-defined pool of preferred suppliers. The relationships observed there seemed to be more distant and involved less dimensions than those examined in Costa Rica. Learning takes time, and Hortifruti is still incurring in high search costs in looking for acceptable suppliers in this country. In the year after the interviews, however, the numbers of suppliers grew rapidly, from 300 to 550.

The presence in Nicaragua of pre-existing and subsidized technical assistance agreements with NGO partners (Technoserve, Save the Children and others) may be another part of the explanation (in addition to the amount of time Hortifruti has been working in the country) for this more distant relationship. There are two potential impacts of these subsidized programs. On the one hand, some elements of this NGO-provided technical assistance (such as general farming practices and “your farm as a business” training) are clearly of a different nature than the services that would normally be offered by an institutional buyer, such as Hortifruti. Therefore, the provision of these services by the NGOs is **complementary** and it allows the entry of farmers who might otherwise be overlooked.

On the other hand, these programs may have had a **crowding out** effect, by removing any incentives for Hortifruti to directly invest in its producers. It is likely, at the same time, that such subsidized assistance at first brings in smaller and more marginalized producers, who might otherwise be excluded from the interlinked arrangements in countries such as Nicaragua.

As a matter of public policy, a balance should be struck which recognizes, on the one hand, the potential benefits of subsidized technical assistance – given the positive externalities involved – and that, on the other hand, minimizes the **crowding out** effect associated with the potential

¹⁷ One of the advantages of a separation between the non-financial and business development services offered by the institutional buyer, on the one hand, and the financial transaction, on the other hand, is that, under financial intermediation, it is possible to actually identify the interest rate charged on the loans, in a transparent fashion. This makes it possible for the agricultural producer to compare the terms and conditions of alternative financial and non-financial contracts, which improves their ability to search and bargain. There may be enough economies of scope in some interlinked transactions, however, for the farmers to prefer bundled contracts.

discouragement of private initiative in this area. This initiative is critical when the provider of technical assistance and market intelligence has access to specialized information, which is not available to others. Above all, experience has shown that such subsidized programs are best as a temporary catalyst. The longer these subsidized programs remain in place and the more their specific assistance overlaps with services that could be provided by an institutional buyer or other commercial provider of business development services, the stronger the crowding out effect will be.

Given a more limited ownership of farm **assets** in Nicaragua, including trucks, Hortifruti has been forced to operate collection points close to where the farmers are and to bring its own trucks right to the farm gate. There is, in general, a less developed physical infrastructure in this country. This inadequate infrastructure increases **transaction costs** for all of the parties involved, both Hortifruti and the producers who could potentially participate in the modern value chain. Opportunities to participate are thus sharply reduced for those producers located in more remote and less accessible areas, particularly those where the Hortifruti trucks cannot go or where it would be too expensive to enter. The importance of location has been highlighted in other studies (Berdegue et al., 2006).

Density also matters. Hortifruti is willing to absorb the corresponding transaction costs mostly in those cases where there is sufficient concentration of producers, to cover the fixed costs involved. As barriers to entry, therefore, these transaction costs weight disproportionately in the case of small farmers located in remote areas, as Hortifruti is hesitant to pay the costs associated with traveling to the more remote regions of the country and collect very small amounts of produce there, while it would be prohibitive for these small farmers to incur the corresponding costs themselves. In contrast, it may be profitable for a large farmer to incur these transactions costs. Thus, location, density of the population of producers with the desired characteristics, and the volumes to be collected matter more when the infrastructure is not well developed and asset/constrained farmers do not own trucks.

In response to these transportation constraints and in order to meet their quotas with Hortifruti, a network of participating suppliers who collect produce from their neighbors has emerged. Although standards of quality are lower in Nicaragua than in Costa Rica, important positive **externalities** are being generated through these indirect linkages. As a matter of public policy, further development of the physical and institutional infrastructure would facilitate a greater expansion of the network of participating farmers.

In **Honduras**, although the Hortifruti operations are smaller and of even more recent presence (since 2001), the contractual relationships between the farmers and the institutional buyer are better developed than in Nicaragua. There is a core pool of (about 45) preferred star producers, who seem to possess the right endowments of entrepreneurial attitudes, experience and willingness to innovate. Hortifruti's procurement even includes production from the fields of the agricultural school of El Zamorano. As elsewhere, Hortifruti looks at these endowments of skills and intangible assets and at the producers' ability to stagger the scheduled production rather than at farm size. Nevertheless, the preferred producers possess sufficient fixed assets, including trucks (although some of them share or pool the use of trucks), and are able to deliver directly to the Hortifruti plant in Tegucigalpa. A second plant, in San Pedro de Sula, concentrates most of its operations on the purchase of bananas and plantains, from comparatively large growers.

Working with a relatively small core of preferred producers, who already have made some technological advances on their own or with support from other sources, direct **technical assistance** from Hortifruti has been less necessary in Honduras. Instead, CDA/Fintrac and several NGOs have been providing various types of technical assistance to the growers (Medlicott, 2005). As elsewhere, the direct upgrading of these growers as well as imitation of the new practices by others have further multiplied the pool of potential suppliers for Hortifruti. As in the other two countries, the farmers in the preferred pool gather produce from their neighbors, in order to meet their own delivery quotas.

Similarly, once a star producer is identified, Hortifruti encourages expansion and/or diversification, to enable him or her to deliver several crops while meeting high standards of quality.

Although only a few of the current preferred suppliers of Hortifruti in Honduras have been trained by CDA/Fintrac, this type of technical assistance seems to fit the needs of the institutional buyer quite well. Indeed, a key element of CDA's efforts to upgrade small producers and allow them to meet market demands has been to focus on ways of addressing broader problems for growers, rather than focusing only on brokering individual deals or on the technical requirements of a specific crop (Chalmers, 2005a). The farmers gain from this broader perspective, as it endows them with the flexibility required to address market changes, while the institutional buyer finds their ability to produce a broad range of crops attractive. The key to making this type of assistance sustainable is to encourage the buyers and other private actors to take over this technical assistance role once they are convinced that it is viable (profitable) to do so.

Indeed, this approach – ensuring that growers have the skills and know-how to cultivate and sell multiple crops – means that the farmers are better able to handle inevitable changes in market demands. A focus on ways of addressing constraints and approaching problems helps smallholder producers to adapt to changing demands from institutional buyers, such as Hortifruti, and even switch crops entirely, if necessary. The set of skills and information CDA/Fintrac has imparted to its clients – including integrated pest management, planting techniques, post-harvest handling, and marketing – can be easily transferred from one crop to another, thus avoiding the locking of farmers into one product.

By combining the use of this broader set of knowledge, skills and know-how with the relationships necessary to maintain the flow of market information – where the institutional buyer possesses a strong comparative advantage – the growers can alter the composition of their portfolio of productive activities, as needed, greatly enhancing the sustainability of project results. This suggests valuable criteria for the development of technical assistance and business development programs. While the interlinked transactions associated with the traditional input-supplier or crop-gatherer model frequently include technical assistance, these services are related to a single commodity and do not create the agility described here.

The positive externalities associated with such technical assistance – that is, the demonstration effects automatically generated as other producers observe and imitate the successful innovations of those who receive the assistance – are of great social consequences. The eventual handoff of the provision of technical assistance to a private actor, such as Hortifruti, is critical, nevertheless, for ensuring the sustainability of the intervention. This is particularly important in terms of the sustainability of the improvement in creditworthiness that is the subject of this paper. If one of the main sources of increased core creditworthiness – the improvement in skills and expertise that leads to improved productivity – disappears, as donor assistance does, then so could a financial institution's recognition of these attributes and its use of these criteria in loan application assessments.¹⁸

5.7 CREDIT HISTORIES AND THE INFLUENCE OF HORTIFRUTI

The farmers with contractual relationships with Hortifruti in Costa Rica have had, at some point, access to credit. This is not surprising in a country where, in earlier periods, close to 40 percent of all

¹⁸ Anecdotal evidence suggests that when banks and microfinance organizations enter into agreements with donor project-sponsored producers, on the basis of that support, they are sometimes unwilling to continue doing so beyond the life of the donor-funded project, calling into question the sustainability of the linkage. This highlights the need to search for sustainable sources of technical assistance, even in parallel to the support of temporarily subsidized sources.

farmers had had access to some formal credit source (Quiros, 1991). Indeed, all of the growers interviewed in this country had used, at some point before or after they had started their relationship with Hortifruti, at least one source of credit. Moreover, with the exception of a couple of associations, which as such do not regularly demand credit, and of one individual farmer, all other growers had received loans from some **formal** financial institution, at some point in their lives. None of the producers in the sample had received loans or advances from Hortifruti, which does not have any regular credit program for its participating suppliers, with the very few exceptions already mentioned.

The financial histories of the preferred growers in the sample include a broad range of sources of credit. One-fourth reported loans from friends and relatives, usually for starting up and to deal with emergencies. One-tenth received loans from informal moneylenders. Several farmers purchased vehicles on credit or took merchandise, on credit, from various types of stores. Credit from **input suppliers** is the norm (in Honduras and especially in Costa Rica) in funding production expenses, usually at short terms (from 30 to 60 days), with or without requiring liens on any assets purchased, and with or without any explicit interest being charged. Some of the producer associations have also had access to credit from special government programs or international donors. For example, the organic producers associated with APPTA received a large loan from the Inter-American Development Bank (IDB).

Three-quarters of the participating farmers in the Costa Rican sample had had loans from banks, either state-owned or private. Almost one-third had had loans from cooperatives. The amounts borrowed from formal intermediaries are small, with US\$ 16,300 as their median value.¹⁹ These are not huge sums, given the different size and profile of the farmers in the sample and the high input-intensity of the agricultural activities that they undertake, particularly after their participation in the Hortifruti network.

The observation of a high incidence of loans from banks and cooperatives – the likely potential sources of investment credit – among the growers in the Costa Rican sample raises, however, questions about the influence of the contractual relationship with Hortifruti on their creditworthiness. This topic was explored both through questions to the farmers as well as questions to officers of financial institutions. In several cases, the growers had borrowed from banks even before they began their relationship with Hortifruti. This raises the additional question of the role of credit in facilitating the upgrading of a producer up to the level required for entry. In other cases, farmers with a long relationship with Hortifruti no longer borrow.

Excluding the producers of beans, who were part of the special arrangement with Banco de San Jose described below, two-fifths of the growers in the Costa Rican sample claimed that their relationship with Hortifruti has been critical in *expanding* their creditworthiness. The typical mechanisms for this expansion have been the signal implicit in the higher and more secured level of sales that the farmers enjoy as well as the influence of the more steady cash flows on their ability to service loans, which have affected the determination of the amounts borrowed. In their loan applications, some of the farmers actually document their levels of sales with records of their Hortifruti transactions. In other cases, the lenders simply learn about the existence of the relationship and this signal is, in itself, valuable. In all these cases, the farmers reported that the terms and conditions of their loan contracts, particularly loan amounts and terms to maturity, have improved.

¹⁹ For the farmers in the sample, the maximum amount ever borrowed from a formal financial intermediary, in a given year, ranged between US\$ 1,623, for a small individual producer of tropical fruits, and US\$ 109,000, for a large and diversified farming business, once the IDB loan of US\$ 500,000 to APPTA is excluded and if producers of beans are not included in the computation of the range of loan sizes. Considering all the observations in the sample, except the IDB loan to APPTA, the median of this maximum amount was US\$ 16,300 (that is, 50 percent of the farmers had never had loans of a larger size).

In turn, many of the officers of cooperatives and banks and input suppliers interviewed confirmed the role that this information plays in their process for screening applicants. Even when the contractual relationship with Hortifruti, per se, is not explicitly used as a lending criterion, the guaranteed market does seem to influence lending decisions.

Moreover, even if the relationship with Hortifruti were not revealed to the lender, the actual impact of the relationship on the evolution of the farming enterprise might lead to larger loans and better terms and conditions. That is, the core creditworthiness would have improved and this might in itself have led to such improvements in loan terms and conditions.

In contrast to Costa Rica, Hortifruti's preferred growers in Nicaragua seem to have enjoyed little access to credit. Some of the producers interviewed did not even know of any institutional source of credit where they could borrow. Again, Hortifruti itself has not been a source of credit, except in a few exceptional cases. Surprisingly, and unlike Costa Rica and Honduras, there has also been very little credit from input suppliers. Given the high levels of uncertainty experienced in the rural areas of this country, many farmers indicated that they are reluctant to get into debt.

Credit to finance agricultural investment has been almost inexistent in Nicaragua. Some loans have been available from NGOs, but even in these cases have mortgages on farm land and other real estate, which require clear title, been requested. Unfortunately, this country continues to suffer from a severe deterioration of property rights and other institutions. For smaller loans, of less than US\$ 600, personal guarantors and/or crop liens (*cartas de venta*) have been occasionally used. Borrower transaction costs seem to be quite high in most cases; this has further reduced the effective demand for credit. Some donor-sponsored projects are working with interested financial institutions (such as the *Fondo de Crédito Rural*, among others) to encourage lending based on the improved creditworthiness of buyers linked to stable markets.

Working capital requirements are mostly met by the farmers through the steady cash flows that result from **staggered** production schedules. In this sense, the contractual relationship with Hortifruti has radically improved the Nicaraguan farmer's liquidity management, has eliminated the severe payment risks they faced in the past, and has helped them in smoothing income and expenditure flows over the year. Assured deferred payments, after a very short waiting period, have given these farmers an opportunity to plan and to consider longer horizons in their production decisions. Indeed, timely payments take place once a week, and this seems to be the attribute of the relationship most valued by the growers. It represents a substantial improvement over the uncertain and unreliable deferred payment from traditional buyers, usually after several weeks.

Moreover, Hortifruti has assisted the Nicaraguan farmers in opening **bank accounts**, where the payments are deposited by the institutional buyer (as safety concerns make it unattractive for Hortifruti buyers to carry cash). These accounts have become a first contact with financial institutions for the farmers, which may eventually evolve into a broader banking relationship. Combined with the increased core creditworthiness, this greater *proximity* to the banks may increase their access to financial services.

In some cases, the farmer has to travel to a place where the bank branch is located, thereby incurring additional transaction costs. As a result, this direct deposit arrangement is not (yet) seen as a benefit by all the farmers involved. At the same time, Hortifruti in Nicaragua collects produce at the farm gate, instead of requesting the farmers to deliver the produce at a centralized plant, as is the case in Costa Rica and Honduras. This approach somewhat balances the transaction costs incurred in the banking transaction.

In Honduras, the relationship of Hortifruti with its preferred suppliers is more of a partnership than in Nicaragua. One important financial implication is a more favorable cash flow management for the

producers, as a result of timely and assured payments, as in the other two countries. There is also evidence that some credit to finance working capital and investment has been available through NGOs, cooperatives, and even some banks, including Banco de Occidente. Several of these sources of credit have been associated with special programs, such as those involving CDA/Fintrac and its successor, USAID-RED, as well as the Sustainable Rural Development Fund (FONADERS). Some of these channels are outside the regulated financial sector, creating distortions in the development of rural financial markets (Falk, Quirós and Gonzalez-Vega, 2006). The limited availability of rural financial intermediaries has created barriers to participation in credit markets, particularly in those locations where property rights are not well defined. Some farmers only possess the usufruct but not the full property of their land and, therefore, cannot pledge it as collateral. Political risks associated with the rural areas have also led to bank requirements of pledges of mortgages on urban rather than rural real estate.

Moreover, in Honduras repressive **regulation** has gradually reduced the set of sources of credit available to farmers. Recent legislation eliminated the use of liens on future harvests, which had been used by some banks to lend for agriculture. The country's prudential regulation classifies all agricultural loans as *unsecured* and, thereby, as subject to higher provisions. This has further discouraged formal financial intermediaries from lending for agricultural purposes. Finally, recent debt forgiveness (of 50 percent of the amount due) and forced rescheduling (of the remaining 50 percent, at 10 years to maturity), ordered by legislation, has resulted in an exodus of financial intermediaries from the rural areas. Because of the adverse expectations and erosion of the culture of repayment created by these forgiveness episodes, several financial institutions face serious default problems in the rural areas.

Working against this trend, some donor-funded projects (in particular, USAID-RED) are working closely with banks and microfinance organizations to induce them to open their portfolios to producers with good market opportunities, and more importantly, to adapt the design of their loans accordingly. Fundación Covelo, *Hermandad de Honduras*, PILARH, and FUNED are such financial institutions that have begun to or are planning to lend in this way (Falk, Quirós and Gonzalez-Vega, 2006).

5.8 THE AGREEMENT WITH BANCO DE SAN JOSÉ

The most interesting example of the direct influence of Hortifruti on the access to credit of its preferred growers has been the agreement with a private commercial bank, *Banco de San José*, in Costa Rica. The *Corporación de Compañías Agroindustriales* (CCA) is a major corporate client of *Banco de San José*. Using this relationship as leverage, the CCA induced the bank to lend to the preferred beans suppliers of Hortifruti. The initial transaction, in 2004, involved an agreement between the CCA, the bank, and the *Cámara de Granos Básicos de Los Chiles* (a regional association of basic grain producers).

The *Cámara* was established in 1999, and it groups 32 members, who cultivate 7,000 hectares and produce 40 percent of the Costa Rican beans harvest and a smaller share of the rice harvest. The five producers of beans included in the OSU sample cultivate, on average, 85 hectares, by renting most of the land they use. Despite the comparatively larger area under cultivation, these producers, who live near the border with Nicaragua, are of humble peasant origin. At harvest time, each one temporarily hires about 200 persons to assist with the crop. Association into the *Cámara* has improved the bargaining power of the smaller members and has allowed the group to engage in several contractual relationships, including the one with Hortifruti.

The agreement included the obligation for Hortifruti to purchase the crop and to pay within a certain price range. In turn, Hortifruti repays the loan directly to the bank, by discounting the loan

amortizations from the payments to the producers. This significantly reduces the bank's exposure to risk. Moreover, Hortifruti's technical advice and oversight of the growers played a critical role in persuading the bank to initiate this pilot effort.

According to executives of the *Banco de San José*, these roles alleviate the bank's concerns about the borrowers' repayment capacity. Furthermore, the close relationship of the growers with Hortifruti gives the bank a strategic partner, with shared interests and the willingness to pool risks. Further, this connection allows the bank to understand how the value chain works, in a way that would be otherwise impossible for loan officers who are removed from the field. Thus, as predicted by the conceptual model developed earlier, the bank has delegated a large part of the screening of these clients to Hortifruti. Because of the shared interests and shared risk (as both entities would suffer if the growers are unable to deliver), Hortifruti's judgment is trusted.

Significantly, the bank did not require the farmers to pledge traditional collateral for these loans, a huge step for a private bank accustomed to lend only on the basis of mortgages. The farmers were required, however, to get **crop insurance** in order to be eligible for the loans – a factor that calls into question the replicability of this pilot in countries without an insurance agent willing to issue such a policy.

This was the only instance, among the growers in the Costa Rican sample, when the farmers had purchased any insurance. The farmers interviewed complained, however, that the state-owned insurance company works with an obsolete model of farm costs, based on 1992 input amounts and prices, leading to extremely high premiums compared to the small protection expected.

The success of this initial credit transaction led to an expansion and formalization of the agreement. In July 2005, the CCA and the *Banco de San José* publicly announced their joint agreement, which they called the "Value Chain Program." The bank committed to offer several financial services, including working capital loans, investment credit, electronic payments services, and factoring to Hortifruti's preferred suppliers. The opportunity to gain access to these financial services was expanded to both agricultural and non-agricultural producers in other areas, beyond growers of beans. This is an example of the explicit involvement of the supermarket chain in directly improving access to credit to its suppliers. (http://www.cca.co.cr/artman/publish/article_29.shtml).

A series of questions still remain with regard to the *Banco de San José* pilot. There are, first, a number of questions about insurance:

- a. What can be done to improve the supply of innovative insurance products and underwriting technologies in countries such as Costa Rica, where crop insurance has been available only from a state-owned monopoly, which charges high prices and uses outdated pricing models? What can be done to improve this supply in countries such as Nicaragua and Honduras, where crop insurance is nonexistent? What are the constraints to the adoption of indexed insurance? Recent pilot experiences that have used indexed-based insurance schemes hold some promise for enticing private insurers into such markets.
- b. What alternatives to formal insurance products exist, which would address some of the production risk imposed on financial institutions from weather, pests, and crop failure, among other states of nature? Are there lessons from microfinance organizations (who work frequently through delegating diversification to the farmers and building sustainable long-term relationships) that suggest how to overcome the need for hard collateral while maintaining high repayment rates?
- c. To what extent can a combination of high-quality expert assistance (including pest control), production technologies that reduce weather-related risk (such as irrigation or greenhouses), and a

positive track record of repayment (reputation effect) induce formal financial intermediaries to forgo crop insurance as a requirement for this type of loans?

Second, there is the question of whether the *Banco de San José* is an isolated case, involving only the relatively sophisticated Hortifruti producers, or if it represents a replicable model.

- d. Is this pilot a template that could be further expanded downward, to reach smaller, more marginalized producers?
- e. Can this model be replicated with other buyers (including some of CCA's strong supermarket competitors) as well as in other countries? Indeed, *Banco de San José* is part of a financial holding that has operations in several Central American nations.

Indications from bank executives as well as promotional materials are promising with regard to this second question. Bank executives explained that the upper-end of the banking market is simply saturated and that a future strategy perceives lower-income market segments as a major opportunity. Further, during the interviews they described plans to expand the pilot to other smallholder-dominated crops, such as some vegetables grown in a protected area and to replicate the experience with other institutional buyers in Costa Rica.

Without a doubt, the most important determinant will surely be the performance and profitability of the existing pilot portfolio. Moreover, if performance and profitability prove satisfactory, this could also become a model used by other financial intermediaries. These organizations may be closer to other groups of producers and they may find it attractive to engage in similar operations. The success of these replications will depend on the existence of a set of sustainable financial intermediaries with the vocation and strategic vision to work with these kinds of borrowers.

6. SUMMARY OF FINDINGS AND RECOMMENDATIONS

First, a more general objective of this case study has been to learn lessons about the extent to which participation in new types of modern value chains influences the diverse degrees of **access** of small and medium agricultural producers to a varied set of financial services, including several types of credit for working capital, consumption smoothing, and investment. Second, one of the more specific objectives has been to examine the potential influences of the producers' contractual relationships with a supermarket chain on the creation and expansion of their **creditworthiness**. Third, another specific objective has been to assess possible ways in which improved access for small and medium agricultural producers to the services of financial intermediaries can remove a barrier to entry into such chains in developing countries. The operations of Hortifruti in three Central American nations (Costa Rica, Nicaragua and Honduras) provided an excellent empirical framework for an exploration of these questions.

Several key findings respond to the initial hypotheses of the case study, incorporate specific observations from the field work involving Hortifruti, and contribute to the emerging novel conceptual framework that has been developed here. Among the most general of the findings are the following:

1. Participation by small and medium agricultural producers in modern value chains – such as those represented by Hortifruti in Central America – leads to a virtuous circle (as shown in Graph 1 of Section 3).
2. The participation of small and medium agricultural producers in these value chains improves their creditworthiness, which in turn increases their access to several types of financial services. As

explained in greater detail later in this section, this enhancement happens through three dimensions:

- a. Participation enhances the producers' **core** creditworthiness, through improvements in their skills, access to expert technical assistance and timely market information, and reliance on assured dynamic markets.
 - b. Participation in the value chain improves the effective signaling to potential lenders of the producers' **revealed** creditworthiness, through the reputation effect associated with membership of the producer in the list of preferred suppliers of a successful supermarket chain.
 - c. Participation improves the lenders' **recognized** creditworthiness of the producers, as the lenders implicitly delegate some screening and monitoring tasks to the institutional buyer. The buyer may even engage the financial intermediary in a risk-sharing arrangement. The enhanced ability to recognize the nature and evolution of the producers' creditworthiness may encourage further investments in innovation of the intermediary's lending technology.
3. Access to a broad **range** of financial services is an important factor in the willingness and ability of small and medium agricultural producers to enter a modern value chain or upgrade their capacity within the chain. The trend towards supermarketization in Latin America and the increased standards associated with the new procurement arrangements present opportunities and threats to small and medium producers, as already identified in the literature. Access to efficient and sustainable financial services can help in addressing the challenges and taking advantage of the opportunities.
 4. Entry into a modern value chain and upgrading into a modern farm enterprise, the required investment, and access to the services of financial intermediation are closely linked. To enter successfully, small producers usually need to invest in both knowledge and equipment. The funding requirements for this upgrading typically go beyond the capacity of any **self-financing** effort with the producer's own savings or beyond any buyer/supplier's funding possibilities. This limitation critically highlights the importance of access to financial intermediaries outside of the value chain.
 5. The case study goes beyond the traditional view of value chain actors as **suppliers** of credit. Instead, it develops an emerging novel view of value chain actors as **facilitators** of access to credit and other financial services for producers, particularly through their influence on the producers' creditworthiness. The experiences in Central America with Hortifruti and several financial intermediaries suggest that this emerging approach presents a number of advantages over the traditional view, as a model for improving access to rural financial services. Specifically, the emerging view recognizes that modern agriculture/supermarket value chains are net demanders of credit, attracting funds from **outside** the chain, and it recommends the benefits from efficient financial intermediation as a way of providing a broad array of financial services, beyond short-term credit.
 6. Country context is an important factor in determining the degree to which this approach can be successful in practice. Specifically, the existing **depth of finance** in a country and the overall health of the financial system will determine whether, and to what degree, financial intermediaries can and will take advantage of the opportunity to expand their supply of financial services to small producers, based on the improvements of creditworthiness listed above.

To arrive at these conclusions, the document has developed a conceptual framework, it has identified key empirical observations in the field, and it offers recommendations for practitioners, donors, and

policymakers interested in promoting more inclusive rural financial systems as well as those concerned with the integration of small producers into growing value chains and the role that these processes may play in rural development.

On the one hand, those interested in the development of rural financial markets will appreciate the role of **linkages** and several explicit and implicit contractual relationships of these producers with supermarket chains and similar institutional buyers – such as some processing firms or exporting firms – in creating creditworthiness and in indirectly assisting in a sustainable expansion of the outreach of efficiently provided rural financial services. Of interest here will be the role of the new types of modern value chains and of the relationships that these institutional buyers develop with their agricultural suppliers in accelerating the pace of expansion of **financial intermediation** in the rural areas of developing countries.

On the other hand, those interested in promoting rural development through the encouragement of more integrated and broadly-based **value chains** and the creation of sustainable access to **business development** services will appreciate the virtuous circle associated with the expansion of creditworthiness.

These readers will gain a clearer and richer understanding of the two complementary dimensions that make up this **virtuous circle**: first, the role that access to efficient and sustainable financial services can and does play in facilitating small-producer **entry** and participation in high-potential market opportunities and, second, the extent to which the further increase in creditworthiness resulting from such participation and linkages can induce an expansion of the supply of more appropriate and cost-effective financial services to these producers and their neighbors and in the **upgrading** of their productive opportunities.

With their linkages to the modern value chain, these small and medium agricultural producers simultaneously gain access to broader market opportunities, productivity-enhancing business development services, and the associated increase in their creditworthiness. Limited access to deposit facilities, loans, and other financial services may **delay**, however, the timing of their incorporation into the value chain and it may even prevent this incorporation altogether.

6.1 OUTSIDE FINANCIAL INTERMEDIATION AND INSIDE VALUE-CHAIN FINANCE

Critical to understanding the great importance of the first dimension is the acknowledgement of the **central role** of financial intermediation – the provision of a broad set of financial services by specialized financial intermediaries – in ensuring, first, a more rapid integration of small and medium agricultural producers into modern, high-potential value chains and, second – by using the value chain as the foundation for the creation of additional creditworthiness – ensuring benefits to small producers and their households through access to a wider range of services. In turn, by using the value chain as the basis for the recognition of additional creditworthiness among their clients, efficient financial intermediaries will be better prepared to further reach into the rural areas.

When the mechanisms for financial intermediation are developed **outside** of the value chain, all participants in the chain can benefit. Particularly in the case of a rapidly growing chain, in the aggregate the chain will be a **deficit** sector, capable of earning high **marginal** rates of return on its uses of funds, compared to the rest of the economy. It should attract funds from outside. That is, the role of efficient financial intermediation would be to attract purchasing power from other (surplus) sectors in the economy, in order to increase the command over resources and the capacity to grow of **all** the participants in the more profitable value chain. This flow of funds from outside will thus represent a net gain in command over resources for the **whole** chain and efficient financial intermediation will improve the country's resource allocation.

Furthermore, sustainable financial intermediaries can typically offer various types of other financial services, which are critical for liquidity management and for coping with risk and which are essential, in turn, for investment and innovation. These financial services enhance the ability of small and medium agricultural producers to join and contribute to the expansion of the value chain. These other services are not typically available from **within** the chain.

In practice, however, the theoretical gains from financial intermediation do not emerge spontaneously. The history of agricultural finance reveals that financial intermediation rarely takes hold in the rural areas of developing countries. The reality of the obstacles to formal finance helps explain the continued operation of numerous direct buyer/input supplier credit arrangements. Interlinked contracts of various types have substituted for the absent financial intermediation. They have again and again been the “saving grace” for producers and crop purchasers alike. Without these traditional arrangements, entire value chains would collapse. These financial transactions within value chains have important limitations.

Traditionally, direct lending by exporters and processors has been especially prevalent in the case of commodities with well-defined marketing structures (such as coffee, cacao, cotton, rice, tobacco, and sugar). While limited (in the form of advances of inputs, in kind, to be repaid with the proceeds of the harvest), these credit services have been valuable where no other options have been available. Moreover, the economies of scope resulting from these **interlinked contracts** have been attractive for particular kinds of crop buyers and farmers.

Although they possess information and contract enforcement advantages as lenders, however, these actors along value chains do not possess comparative advantages in the provision of many of the other financial services demanded by small and medium agricultural producers, including loans for other purposes and long-term credit. In many cases, therefore, the expansion of financial intermediation, while not necessarily replacing this type of direct buyer/supplier financing, is an improvement upon the situation. It broadens the range of services offered, to both producers and marketing agents, it increases the market power of producers, and it diversifies against systemic risks.

Given these conclusions, some readers might wonder what options are left to policymakers and program designers, if they follow the findings and recommendations of this case study. While critical, simply supporting the emergence and strengthening of financial intermediaries, in general, has not produced the desired results in terms of outreach of rural financial services. Clearly, major obstacles to rural financial transactions still stand in the way of a rapid expansion of outreach (Gonzalez-Vega, 2003a).

This case study highlights, in contrast, the promise of working with **both** financial intermediaries and value chain actors, in order to harness the **comparative advantages** of each set of agents. In this way, the services supplied by financial intermediaries will be adapted to fit the demands of the clients associated with the chains, while the access of the producers to a wider range of financial services in the rural areas will increase through the improved creditworthiness that emerges from the value chain relationships.

A second dimension critical to an appreciation of the nature of this virtuous circle is the role that the contractual relationships developed among various parties along a value chain – such as the linkages developed between a supermarket chain and its preferred suppliers – have on facilitating the emergence of more cost-effective and less risky financial transactions of various kinds.

This **indirect** role of the linkages found along a value chain, in facilitating the expansion of credit flows from outside the chain, can potentially be more powerful than the traditional **direct** role, frequently discussed in the literature, associated with the limited credit transactions that frequently take place among participants inside the chain itself. Those transactions are usually very restrictive in

terms of the specificity of the (single) product involved, (small) loan amounts, (short) terms to maturity, potential for the exercise of monopoly power at the time of pricing of the crop, and vulnerability to the systemic shocks that tend to affect all actors in the chain alike.

As universally acknowledged, the development of sustainable rural financial intermediation encounters numerous obstacles (Conning and Udry, 2005). This case study suggests that rapidly growing value chains can assist in this process, first, by facilitating the expansion of **core creditworthiness**, through the increased farmer productivity and better risk management associated with the linkages to the institutional buyer and other providers of business development services. The contractual relationships developed along the chain can also assist in this process by providing **signals** that allow the **revelation** by the producer and **identification** by the lender of the increased creditworthiness. The result should be an expansion of the outreach of financial transactions, at better terms and conditions: larger loans to borrowers who show better credentials (including borrowers who may have previously been classified as unqualified), at longer terms to maturity, and a lower cost of funds (resulting from both lower interest rates and lower borrower transaction costs).

The remaining question, not fully resolved here, is the extent to which an expansion of access to appropriate rural financial services may facilitate the entry of a larger number of medium and small agricultural producers into these growth-enhancing value chains. Specifically, the case study suggests the need for more research into the question of the extent to which the lack of access to financial services – such as the long-term credit needed for investment, deposit instruments that facilitate self-financing and the accumulation of down-payments, and instruments for money transfers and remittances – may represent **barriers to entry** that impede such integration. The experience of Costa Rica suggests that the more widespread access to a range of financial services, in comparison to Nicaragua and Honduras, was indeed one of several factors that allowed so many small producers to take part in the chains developed around supermarkets (Hortifruti and its competitors). This remaining challenge is the fundamental task of creating creditworthiness for small and medium agricultural producers who do not even yet participate in a modern value chain. Lessons from microfinance will be relevant in addressing this task (Gonzalez-Vega, 2003b).

The interactions between financial intermediation and value chains thus matter in **both** directions. On the one hand, participation in the new types of value chains generates larger demands for the services of financial intermediaries and, at the same time, it helps in expanding the creditworthiness required to obtain these services. On the other hand, a reduction of the generalized **rural lag** in financial intermediation will be needed to release the credit constraints that may prevent many small and medium agricultural producers from even joining these chains. The expanded and improved outreach of financial intermediaries would thus represent a step towards increasing the benefits of value chain integration for rural populations in developing countries.

These views have implications for those in charge of designing and implementing value chain and/or business development services programs. Their central role may not necessarily be one of finding a **credit linkage** for the producer with another actor **within** the chain (which, in some circumstances, may still be a valuable connection). Rather, their central role may be to enhance the ability of the small and medium agricultural producer to be a **superior performer** within the chain. That is, the facilitation of access to efficiently provided non-financial and business development services, jointly with other dimensions of the new contractual relationships (in particular, a guaranteed market) may indeed assist in the generation and expansion of **effective creditworthiness**. This may, by itself, improve access to credit, by increasing the profitability and reducing the risks faced by the producer (core creditworthiness) as well as by facilitating the cost-effective signaling of the associated creditworthiness to potential lenders and by improving the effectiveness of the lenders' screening efforts in identifying this creditworthiness, in part through their clearer observation of the transactions that take place along the value chain.

Another role for the value chain experts may be to help financial intermediaries become more familiar with the commercial relationships and productive activities of the medium and small producers linked to the chains, thus improving the ability of these lenders to recognize the enhanced creditworthiness. This may facilitate, among other things, the emergence of risk-sharing arrangements between financial intermediaries and institutional buyers, as shown in the *Banco de San José* initiative.

6.2 TESTING THE HYPOTHESES

A view from the traditional perspective of buyer/supplier credit and interlinked transactions suggests that supermarket chains, as several other agribusinesses and marketing actors, have **advantages** in engaging in credit transactions with the agricultural producers that supply them with several products. This is the **traditional** view of the supermarket chain as a **direct source** of credit for the participating farmers.

Nevertheless, in contrast to previous research findings, this case study has found **no evidence** that Hortifruti plays or has played in the past this role in any significant way in Central America. Some producers have received inputs on credit and have even obtained loans from Hortifruti, but this has occurred only in special circumstances and with a very limited scope. As an institutional policy, Hortifruti is not a source of credit for its preferred growers. With the growing presence of Wal-Mart among the owners of this corporation, it is unlikely that this (absent) role will change in the future.²⁰

In contrast, the **emerging** novel view documented in this case study considers the linkages and contractual relationships with the supermarket chain as **triggers and enhancers** of creditworthiness. The impact of participation in the value chain on the farmer's access to credit is, in this case, **powerful but indirect**. The case study has uncovered sufficient pieces of empirical evidence to support this hypothesis. Additional research will be needed to further document the relative importance of the different channels through which this effect takes place and the nature of the linkages between access to finance and entry into value chains.

Initially, the design of the case study assumed the existence of a direct credit relationship of the traditional type. Indeed, one of the hypotheses adopted during the design phase of the study was that information, incentive, and contract enforcement advantages would induce direct credit relationships between the supermarket chain and the participating producers.

In a **first stage** of this process, participation in the new value chain would create, per se, immediate access to credit from the institutional buyer. According to this hypothesis, the producer would gain access to loans or to advances on future sales, while at the same time engaging in a selling-purchasing contractual agreement and other linkages with the institutional buyer.

Moreover, in a **second stage**, the development of the credit relationship between the supermarket chain and the producer would generate information about repayment and would create a **reputation**. In particular, it would create a **credit history** for the producer. This credit history could be made **portable** and it could then be used in demonstrating creditworthiness to other lenders. When such were the case, the producer/borrower could graduate to the services of a more complete financial intermediary.

²⁰ In April of 2006, Wal-Mart acquired additional shares in CCA, which gives this multinational corporation a controlling role in the Central American supermarket chain. Wal-Mart's tremendous growth worldwide has been mostly due to efficiencies in managing their supply chain, stemming from innovations in computerized logistics and distribution systems. Wal-Mart's ability to require suppliers to adopt cost-saving technologies is one of the cornerstones of its model (Irwin and Clark, 2006). While agreements such as the one with Banco de San Jose will be continued, it is unlikely that Hortifruti will be engaged in direct lending to its preferred suppliers.

This case study did not find, however, relevant empirical evidence to substantiate this naive version of the **graduation hypothesis**, at least in the case of Hortifruti in Central America. Indeed, future research might investigate variations of this graduation hypothesis in other contexts, particularly in those cases where the first stage of direct credit from the institutional buyer has actually taken place.

An alternative hypothesis adopted during the design phase of the case study was that the producer's complex **contractual relationship** with the institutional buyer and, in particular, the effect of the technical assistance and other business development services provided by the buyer, combined with the greater and more reliable access to a market that is guaranteed by the implicit contract, would contribute to the creation and enhancement of creditworthiness. In this case, lenders not directly linked to the value chain would incorporate, in their credit screening and monitoring efforts, information about the producer's contractual relationship with the supermarket chain. The case study found substantial evidence about the validity of this **signaling hypothesis**.

Nevertheless, the strength that these indirect influences of the producers' linkages to the supermarket chains have on finance heavily depends on the **depth** of financial intermediation found in each country. Even if these linkages could potentially create and expand creditworthiness, increased access to credit will not occur in places where rural financial markets are repressed and shallow. In particular, the ability of financial intermediaries to assess and recognize creditworthiness is a key factor in the success of this virtuous circle.

This highlights the importance, for policymakers, of inducing an environment conducive to the emergence of efficient and sustainable financial intermediation and promoting financial innovation. Intermediaries with a broader spatial outreach and diversified portfolio may offer a robust anchor to the development of these rural portfolios. When these financial intermediaries eventually emerge, the existence of the contractual linkages developed along the value chain could contribute much to the further expansion of their rural outreach.

The case of the agreement between Hortifruti and *Banco de San José* represents an interesting variation of the second hypothesis. Although the producers involved had not borrowed from Hortifruti and, therefore, a direct credit relationship did not exist (which allows the rejection of the first hypothesis), the institutional buyer relied on the **reputations** built by the farmers in their commercial dealings with the institutional buyer, in order to promote the connection with the bank and recommend the producers for the bank loans. Furthermore, the existence of a corporate banking relationship between Hortifruti and Banco de San José had given the bank an opportunity to understand the nature of the linkages that had evolved around the institutional buyer and, therefore, it gave the bank insights about **how to interpret the signals** embodied in the implicit contracts between Hortifruti and its preferred producers. Under certain circumstances, the reputations that the producers develop with the institutional buyer might create a willingness of the buyer to become a cosigner or a guarantor of the bank loans granted to these producers. These **risk-sharing** arrangements will be more likely if some type of (indexed) insurance mechanism exists.

Several **spill-over** effects from the evolving experience with such pilot lending mechanisms are likely to occur. As the bank learns about the repayment behavior of the small and medium agricultural producers and about the profitability of these lending opportunities, these mechanisms will be replicated, with other types of Hortifruti suppliers and with the suppliers of other supermarket chains. Further, **imitation** by other banks is likely to emerge in the future, thereby creating a new channel for bringing financial services to the rural areas. The extent of these replications and imitations will respond to the country's regulatory environment and to the increasing degree of competition among banks and other financial institutions.

6.3 POTENTIAL EXPLANATIONS AND ADDITIONAL HYPOTHESES

Placed in the Central American context, the very limited observation of direct credit relationships between the supermarket chain and its preferred suppliers is not surprising. In this part of the world, supermarket chains are expanding rapidly. This fast growth creates strong demands for liquidity, as rapid expansion requires substantial net funding from outside of the chain. In these circumstances, loans to producers would imply a high **opportunity cost** for a supermarket chain. The chain most likely has more profitable, productivity-enhancing ways of investing its own funds.

Moreover, the modern supermarket chains (correctly) perceive that their **comparative advantages** are in the introduction of the complex innovations in procurement and in retailing that are revolutionizing the food sector in these countries. Efficiency suggests that they should focus their managerial resources toward these areas and only be concerned with funding their suppliers if strictly necessary and in the absence of alternative sources of credit.

Further, the supermarket chains may perceive that the addition of a lending dimension to their already complex contractual relationship with the producer may introduce a potential conflict of interests, as the producer's repayment capacity will depend on the terms and conditions of the purchases by the institutional buyer itself. Thus, for example, a reduction in prices could threaten the repayment of loans. The difficulties could be potentially severe when **systemic** shocks threaten all actors along a value chain. In these circumstances, both the producer and the institutional buyer would require emergency credit and other financial services, which can only be obtained from outside the chain.

In Central America, the case study has observed, in contrast, evidence of the **indirect** impacts of the contractual linkages with the supermarket chain on the producers' access to credit. The accompanying creation and enhancement of creditworthiness are related to several implications of the **contractual** relationship. These implications are examined in detail next.

First, the increased creditworthiness is, in large part, related to a reduction in the **risks** faced by the producer and, thereby, by the lender. There are at least five dimensions of the containment of risk that takes place as a result of these contractual relationships:

1. A reduction in **volume** risk. The relationship with the institutional buyer guarantees the purchase of the amounts previously specified, and this makes the producer less susceptible to transitory variations in market demand. In addition, technical assistance about pest control and other reductions in yields reduce **production** risks. This enhances the preferred supplier's ability to repay, in contrast to producers that face uncertain sales amounts in wholesale markets or exogenous shocks on yields.
2. A reduction in **price** risk. Given the long-term nature of the relationship (implicit contract) between the preferred supplier and the institutional buyer, the range of price variability is reduced. This enhances the supplier's ability to repay, compared to producers who sell in spot markets where prices fluctuate widely.
3. A reduction in **payments** risk. There is almost certainty about the deferred payments from the institutional buyer, in contrast with the great uncertainty associated with sales to traditional wholesalers. This enhances the preferred supplier's ability to repay on time.
4. A reduction in **rejection** risk due to inadequate product quality. The technical assistance from the institutional buyer or another provider of business development services and the learning by the producer reduce the risk of rejections due to inadequate product quality. This enhances the preferred supplier's ability to repay, compared to occasional producers who are less aware of quality standards.

5. A reduction in **consumption smoothing** risk. Sustaining minimum consumption levels is a senior claim on the flows of income of the farmer's household, which precedes loan repayment in the case of adverse shocks. The opportunity to sell throughout the whole year and to plan planting and income flows reduces this risk, increasing the producer's willingness to repay.

Parallel to these reductions in several dimensions of the risk faced by farmers, the contractual relationship, jointly with the delivery of business development services, improves the producer's productive opportunity. This improvement has two effects. On the one hand, it increases the farmer's **demand** for financial services, in particular the amount of credit demanded but also instruments for liquidity management and risk mitigation. On the other hand, it increases the farmer's ability and willingness to repay loans (that is, creditworthiness).

The greater **ability** to repay is a direct consequence of the more attractive productive opportunity enjoyed by the farmer. It also reflects the ability to make payments on a regular basis, a feature of the farmer's cash flows that allows the implementation of typical microfinance lending technologies. Higher levels of **productivity**, induced by technical assistance and other business development services, can be achieved through innovation and increased specialization, while risk management can be facilitated by the opportunities to **diversify** the set of crops sold to the supermarket chain. These opportunities offset some of the increased **innovation** risk from the experimental nature of the new activities pursued by the small and medium agricultural producer.

The greater **willingness** to repay (compared to a situation where the farmer does not have the linkage to the supermarket) is a reflection of the greater value to the farmer of the bank **relationship**, now that the farmer has an attractive opportunity that requires external funding. The farmer understands that there is value in protecting the bank relationship, in order to be able to participate in the value chain more fully. Combined, these two effects should typically lead to more than proportional increases in the amounts of credit available to the producer.

A rapid expansion of the rural outreach of financial intermediaries faces severe information, incentive, and contract enforcement constraints. The enhancement of creditworthiness resulting from participation in a modern value chain offers promising opportunities for additional financial deepening in the rural areas of developing countries. The breadth and depth of these financial markets will be critical, in turn, to allow small and medium agricultural producers to overcome constraints to their incorporation in these value chains. Practitioners, donors, and policymakers interested in financial development, rural development, and value chain upgrading will find here a valuable common ground to cooperate and promote rural development.

Access to the services of financial intermediaries may be critical in ensuring that small farmers are not **left out**, as the market for fruits and fresh vegetables continues to evolve. At a minimum, access to a broad range of financial services can help small producers who already are integrated into such value chains to remain there and continue to grow and improve as the value chain expands and diversifies. These producers would have already built their reputation with the institutional buyer, but they may need additional financial services to keep up with the rates of change and expansion required by the evolving value chain.

Greater challenges emerge in connection with the entry of new small producers into such chains. In the absence of the signals of creditworthiness that emanate from the contractual relationship with the institutional buyer, it may be difficult for small producers to gain access to the credit portfolio of financial intermediaries. Here is where further **innovation** in lending technologies, appropriate for the rural areas – and, as in this case, appropriate for farmers in a process of modernization – will still be required. A correct approach to promoting innovation in financial markets will be critical in these efforts.

The participation in modern value chains, combined with greater access to the services of financial intermediaries, creates a virtuous circle (as shown in Graph 1 in Section 3). The relationship between small and medium agricultural producers and a sophisticated institutional buyer, such as Hortifruti, accompanied by more reliable marketing arrangements and expert technical assistance, leads to higher and steadier income flows for the producers. Higher incomes and lower risk serve as triggers and enhancers of creditworthiness. Based on the upgraded productive opportunity, the producer gains access to additional credit from financial intermediaries, at better terms and conditions. The relationship with the intermediary becomes a source of other critical financial services. These financial services assist in additional investment and upgrading of the producer's activity. Such upgrading further improves productivity and incomes, thereby creating additional creditworthiness. Along the process, financial intermediaries expand their outreach in the rural areas, and the virtuous path followed by the participating farmers generates several positive externalities that contribute to rural development.

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