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**Value Chains and Financial Intermediation: Some  
Theory and a Case Study about Creditworthiness,  
Supermarkets and Small Producers in Central  
America**

**by Claudio Gonzalez–Vega, Geoffrey Chalmers, Rodolfo Quiros and  
Jorge Rodriguez–Meza**

This paper was chosen through an open call for research in rural finance, whereby the selected individuals were invited to Rome, Italy, to share their results during the conference and to discuss key issues in shaping the rural finance research agenda as well as ways of strengthening the ties between research, policy and practice.

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## FOREWORD

An extended and much more detailed version of this document —under the title *Hortifruti in Central America: A Case Study about the Influence of Supermarkets on the Development and Evolution of Creditworthiness among Medium and Small Agricultural Producers*— was prepared for the Accelerated Microenterprise Advancement Project (AMAP), as part of the Rural and Agricultural Finance Initiative (RAFI), a joint effort of the USAID Office of Agriculture and the Microenterprise Development Office. Claudio Gonzalez-Vega is Professor of Agricultural, Environmental and Development Economics and Director of the Rural Finance Program at The Ohio State University (OSU). At the time of the research, Geoffrey Chalmers worked in the Microenterprise Development Office at USAID. Currently, he is USAID’s Financial Markets Advisor in Mexico. Rodolfo Quirós is 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.

All four researchers visited the Hortifruti headquarters in San Jose in November of 2004, to interact with officers, from the top management to agronomists/buying agents. The researchers also interviewed representatives of Banco de San Jose as well as several financial institutions where the participating farmers usually borrow, in the three countries. The field work, including producer interviews with a sample of participants, was implemented by Quirós in Costa Rica, Chalmers and Rodríguez-Meza in Nicaragua, and Rodríguez-Meza in Honduras, in early 2005.

The authors are grateful for the 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 who were interviewed about their experience and with the representatives of other supermarket chains and 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 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 at the VIII Inter-American Forum on Microenterprise, in Santa Cruz, Bolivia, and from Calvin Miller and participants in the Seminar on Value Chain Finance organized by FAO, RUTA, and Academia de Centroamérica in San José, Costa Rica. The views expressed here are those of the authors and not necessarily those of the sponsoring organizations.

# **Value Chains and Financial Intermediation: Some Theory and a Case Study about Creditworthiness, Supermarkets and Small Producers in Central America**

## **1. Introduction: value chains and financial markets**

This paper examines two dimensions of the 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 focuses on ways that existing or potential value chain relationships facilitate access to a broad range of financial services and explores ways in which expanded financial intermediation facilitates increased smallholder participation in modern chains.

Intriguing examples of new value chains are the structures of vertical integration and implicit contracts created around supermarkets. Following dynamic changes in consumer preferences and demand patterns, supermarkets are expanding vigorously and are revising the arrangements for their purchases from small and medium agricultural producers, with implications for the producers, the financial transactions in which they engage, and the opportunities for financial intermediaries to expand their rural outreach.

The purpose is not to examine the new value chains but, rather, their influence on the pace and style of rural **financial deepening**. The analysis also sheds light on whether greater access to financial intermediation can assist in democratizing these very chains, by helping small and medium producers overcome finance-related barriers to entry. Efficient and sustainable financial intermediation can assist the farm-households' income generation and risk management, in support of their welfare-enhancing participation in modern value chains.

A more effective integration of small and medium producers into rapidly growing and modernizing value chains contributes to their welfare and the creation of wealth in poor communities (Downing, Field and Kula, 2005; Dunn, 2005). For this, rural households demand a broad range of financial services, beyond short-term credit. While the traditional financial arrangements found along value chains do not typically satisfy many legitimate demands for these services, participation in modern value chains may facilitate access to finance elsewhere.

The new contractual relationships associated with supermarkets have been examined by others (Reardon et al., 2005a). Less has been studied, however, about the implications for the evolution of financial intermediation of the resulting changes in marketing structures. There is also a gap in the literature related to how access to finance changes the dynamics of market participation (i.e., who are able to participate and who are not). The paper attempts to fill these gaps.

The general 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? To what extent can financial deepening facilitate the entry of larger numbers of small producers into these chains?
- (b) To what extent can participation in these new value chains improve the producers' overall access to credit? What are specific channels through which the expansion of access to credit takes place?
- (c) To what extent can the multiplication of the new contractual relationships create conditions favorable to an expansion of the rural outreach of financial

intermediaries' portfolios? How does development of the modern value chains influence access to financial services other than credit?

The paper focuses on two channels for the potential influence that value chains may have on differential degrees of access to credit. One is related to the role that marketing intermediaries along a value chain (such as crop consolidators, traders, wholesalers, retailers, processors, supermarket chains, fast-food chains, 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, vertical linkages within marketing systems create 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). Frequently the farmers are users of credit while, in other cases, they are credit providers, to the extent to which they accept short-term deferred payments from traders and other buyers of their crop. The presumption is that these vertical linkages facilitate access to credit for various types of actors along the chain.

The recent expansion of supermarket chains has led 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 paper addresses the implications for financial deepening of the resulting transformations of the structure of wholesale and retail markets for agricultural goods in Central America. Thus, the second dimension considered is the **indirect** impact that 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 and other financial services, outside of the value chain.

Efficiently received 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, 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.

One question is whether the 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 relationships facilitated by value chains for specific commodities, such as coffee, cocoa, sugar cane, tobacco or cotton (Rodriguez-Meza, 2003). Supermarkets offer a new breed of interlinked transactions, not linked to a particular crop. Also, there seems to be more rivalry among supermarket chains than among single-crop buyers, while the year-long demand of supermarkets for multiple products allows 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 since their diversified portfolio mitigates credit risk.

Finally, farmer participation in modern value chains requires willingness to adopt profitable but risky innovations and 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 improve the producer's creditworthiness and thereby its ability to gain access to additional financial services.

The document proceeds as follows. The second part develops a conceptual framework, centered on a rigorous discussion of the specific concept of creditworthiness used here. This framework serves to organize the observation of the purchase arrangements and contractual relationships of a private distributor of fresh fruits and vegetables, Hortifruti, an institutional supplier of a multinational supermarket chain, and its influence on the development of small and medium producer creditworthiness in three Central American countries (Costa Rica, Nicaragua and Honduras). Hypotheses for the empirical research are derived from the conceptual framework.

The third part describes the rise of supermarkets in Central America and the implications of their operations for the expanded creditworthiness of the associated producers. The fourth part identifies key features of the new contractual relationships and business development services offered by this supermarket chain, describes the field work, and presents some results. The different degrees and patterns of expansion of the

purchasing activities of Hortifruti and their influence on creditworthiness in the three countries studied are contrasted. The fifth part derives lessons from the experience.

## **2. Conceptual framework: defining creditworthiness**

Rural firm-households demand a broad range of financial services:

- (a) safe and convenient deposit facilities and instruments that facilitate saving and the accumulation of liquid reserves, including those for precautionary purposes;
- (b) various 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 services are demanded 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. Increased access to sustainable financial intermediaries, able to supply a broad range of financial services at competitive prices and terms and conditions adapted to the demands of small and medium producers, augments the welfare of the rural population. In most developing countries, however, formidable obstacles keep the rural outreach of financial intermediaries quite limited. These obstacles arise from demand and supply shortcomings and are greater when the clients are poor, the transactions are small, risk cannot be easily mitigated, information is scarce, and mechanisms for contract enforcement are unavailable.

The rural demand for financial services is constrained by high transaction costs, a limited ability to signal creditworthiness to potential lenders at reasonable costs, and low repayment capacity due to lack of market opportunities. Supply is similarly restricted due to lack of reliable information about potential borrowers, the difficulties of contract enforcement, and covariant risk facing potential lenders in rural areas. Costs and risks increase with distance, in all of its dimensions —geographic, social, ethnic, cultural, linguistic, occupational, and the like— and with isolation. Usual shortcomings include the narrow range of financial services offered. Few services are offered, in ways that do not adequately address the requirements of the portfolios of activities found among participants in value chains.

Faced with the insufficient outreach of financial intermediaries, farmers along agricultural value chains find in interlinked credit transactions with buyers, processors or input suppliers an incomplete substitute for financial intermediation. These arrangements, sometimes called *supplier finance* or *value chain finance*, rest on the advantages that different actors have in lending to other actors along the same value chain. These advantages overcome information gaps, because of the familiarity and trust between actors.

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).

In these environments, 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. Actual access reflects differences in creditworthiness.

A rigorous definition of *creditworthiness* is developed next. 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 (when there is default).

Overcoming these challenges requires information to establish ability and willingness to repay and designing a structure of incentives to induce a greater willingness to repay. **Ability** to repay depends on a number of circumstances, including the nature of the whole portfolio of economic activities undertaken by the household. Two features of this portfolio matter. One is profitability, which makes it possible for the borrower to repay and keep something to address the household's own needs.

Profitability depends, in turn, on features of the productive opportunities available to the borrower.

The lender must encourage and monitor the borrower's diligence in keeping its ability to repay intact. Because monitoring is costly, the design of the contract usually incorporates incentives for the borrower to be diligent (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 a credit transaction.

The other central feature of the household's portfolio 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 with petroleum-related products. Risk is also influenced by the *state of nature*, namely, the actual materialization of circumstances beyond the control of borrower and lender but that, nonetheless, influences the outcome. One feature of agriculture that makes it risky in the eyes of lenders is the high incidence of these exogenous circumstances. Ability to repay also comes from accumulated wealth, namely, from assets that can be sold in order to repay outstanding loans.

**Willingness** to repay originates from a number of circumstances, related to what lenders describe as the borrower's *honesty* or reputation of having fulfilled contractual obligations. 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 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. Incentives to repay also emerge from fears of loss of assets pledged as collateral. In microfinance, key incentives to repay originate from the **value of the relationship** between the two parties.

Given incomplete, imperfect and asymmetric information about risk/return combinations —information that is costly to acquire and interpret— lenders are unable to easily identify potential defaulters and thus develop costly risk-reducing *technologies*, to identify good clients.

There is a basic, objective element of creditworthiness. This not easily observable component represents the **core creditworthiness**, based on the applicant's actual ability and willingness to repay, with repayment never being certain. If all the required information were available, it would be possible to identify this core creditworthiness at no cost. Information, however, is imperfect and the lender cannot easily observe it. Moreover, information asymmetries introduce incentives for opportunistic behavior, which further increases risk.

Thus, given an applicant's actual ability and willingness to repay (which are the foundations of *legitimate demand* for credit) and given a lender's degree of risk aversion, a loan will not be granted unless the lender has been persuaded that the expected losses from default are sufficiently low. Therefore, in addition to the core ability and willingness to repay, there must be a **recognized** creditworthiness, namely the lender's subjective appreciation of the applicant's core creditworthiness.

This appreciation —always imperfect— depends on the information available to the lender, the effectiveness of contract design in creating sufficient incentives to repay, and the existence of cost-effective mechanisms for contract enforcement (i.e., on the various components of the lending technology). Implementation of the lending technology is always costly. The potential borrowers can, however, contribute to a reduction of these costs by issuing credible signals about their ability and 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 its ability and willingness to repay a loan of a given amount. Therefore, any loan transaction requires both the presumed existence of core creditworthiness as well as the revelation-recognition of this creditworthiness **jointly** by borrower and lender. Any circumstances that may reduce the costs of revealing or recognizing creditworthiness promote greater access to credit.

Differences in the pace of incorporation of producer-borrowers into rural financial markets reflect, on the one hand, different combinations of their ability and willingness to repay loans (i.e., the objective, core creditworthiness of each applicant) and, on the other hand, the different capacity of potential borrowers to signal their creditworthiness, namely their capacity to demonstrate, in a manner that is cost efficient for both borrower and lender, that creditworthiness exists. 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 and they jointly invest in the development of long-term relationships. Once a first loan is granted, they engage in the building of reputations: the borrower, with the punctual service of the loan, to gain continued access to services; the lender, with good quality of services, 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 successful relationships continue over time, both borrower and lender benefit from the sunk costs of having been learning-by-doing together. Additional transactions become possible at lower costs and risks for both parties and, through demonstration effects, other financial institutions begin to copy these successful efforts.

If the costs of jointly creating creditworthiness are not prohibitive, the transaction emerges. As additional creditworthiness is built over time, there are gradual improvements in the terms and conditions of access to loans: amounts increase, effective interest rates and transaction costs decline, terms to maturity get longer, and the range of services offered broadens. Indeed, access to credit is not defined here as the producer having or not loans. Rather, *access* to credit is defined by the evolving attributes that make a financial relationship a more useful instrument. Thus, even for those producers who already have loans, the quality of their access can further improve. Frequently, such improvements 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 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 (in 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 modern 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 improve the producer's creditworthiness and thereby the terms and conditions of credit and 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. Along each one of these paths, increased access to credit occurs when any one of the following circumstances takes place:

- (a) The **core** creditworthiness of the producer improves, leading to an expansion of its 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 it finds that the incentives to comply with the obligations of the loan contract are more attractive than before.
- (b) The producer improves its capacity to signal —to the potential lender— its 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 paper suggests that **all** of these influences come into play with the emergence of the new types of value chains associated with supermarkets. To demonstrate this, the next section briefly describes the emergence of supermarkets in Central America and compares the procurement practices of the new institutional buyers with different types of interlinked transactions highlighted in the earlier literature. This discussion leads to new hypotheses.

### **3. Interlinked transactions and the rise of supermarkets**

One dimension of the globalization of retailing has been the *supermarketization* of food markets in many developing countries (Reardon, 2005a). In response to shifting consumer demands, retailing chains have become the main providers of market signals, which cascade along the value chain to processors, wholesalers, and producers, substantially influencing and modifying contractual relationships and marketing patterns. Because supermarkets have responded to consumer demands in terms of cost, quality, shopping environment, diversity and convenience, they command an increasing share of the food market throughout Latin America (Berdegúe et al., 2003).

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

In this transformation, Central America has lagged 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). 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). This transformation has led to the centralization and eventual regionalization of the procurement systems of leading supermarket chains. The recent purchase by Wal-Mart of the holding company that owns Hortifruti will further accelerate these process.

The adoption of private quality standards has also grown (Balsevich et al., 2003). Small and medium producers are expected to meet new cost levels and margins, safety standards, and packaging and traceability requirements, approaching those used by globalized retailing chains. Their ability to meet these standards will determine their ability to take advantage of these new market opportunities. Expanded financial intermediation will reduce some of the barriers to entry that constrain participation by these producers in the modern value chains.

These developments have resulted in the consolidation of centralized buying points and **distribution centers**, with flows of fresh fruits and vegetables moving away from traditional wholesalers and markets toward the new institutional buyers. These changes have transformed, in turn, the patterns of finance along these value chains. The changes in procurement practices have resulted in a shift from spot markets to formal or informal long-term **contractual** relationships between the new institutional buyers and

new specialized wholesalers and/or enterprising agricultural producers who sell directly to the centers (Reardon, 2005).

These contractual relationships involve complex bundles of commitments and standards of performance for both parties, which entail major investments on their part. First, to meet the volume and timing of the requests for produce and achieve the standards of quality and conditions of delivery required by the institutional buyers demands substantial investments of time and effort by the small and medium producers.

These investments take two forms. 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. New physical investments are also needed in irrigation structures, greenhouses, trucks and other inputs required for enhancing productivity and increasing delivery capacity. Both types of investment increase incomes over the long run, but both are costly and risky.

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, 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 engage in these extraordinary efforts if there is a credible expectation of sufficiently high returns. For the farmer considering this option, the possibility of sustained, **repeat** transactions is at the core of incentives for participation.

Second, the supermarket chain and its institutional buyer invest in the development of **long-term** relationships with the 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. Success in these efforts requires long-term, sustainable relationships with dependable suppliers (Alvarado and Kiupssy, 2002).

This multiplicity of valuable **contractual** dimensions can be observed by a potential lender, at the time of assessing a farmer's creditworthiness. In ways similar to the challenges faced by lenders, the institutional buyers work with imperfect and asymmetric information about which specific farmers possess the endowments of experience, skills, location, attitudes, and ability to respond to modern requirements. Thus, institutional buyers incur search costs, in attempts to identify a list of preferred suppliers ready to engage in 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 undertaken by lenders. Moreover, failure of some farmers to comply with performance requirements increases search costs, as only a portion of the producers will be retained. Thus, to enhance their capacity to deliver, the 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 producers, the buyer cannot recover this investment and experiences a loss. Thus, it may be willing to pay something to avoid these losses. Indeed, when a **star producer** is identified, the

supermarket chain and its 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 producers that have shown a good reputation. Moreover, the buyer should be willing to offer something in return —the equivalent of efficiency wages— to those producers that make special efforts, to retain them (Akerlof and Yellen, 1986).

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 receive over the long term. Thus, without incurring all the screening costs, 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 advantages for the participating small and medium producers, a reduction in price instability is quite important. In Central America, exceptionally wide fluctuations in the prices of agricultural products throughout the year are correlated with household income instability and poverty and vulnerability (Beneke de Sanfeliú and Gonzalez-Vega, 2000).

Supermarkets are expected to offer fresh fruits and vegetables throughout the whole year. In contrast to traditional specialized single-crop value chains, supermarket chains demand a broad range of varieties and products. This allows for risk-reducing diversification for the farmer and increased flexibility to shift production (while not

losing the contractual relationship with the buyer) when market demands or tastes change. Risks are lowered and core creditworthiness augmented by the reduction in price instability, sustained demand throughout the whole year, and broader opportunities for diversification. The task of lenders is thus facilitated by the credible **signals** generated by this process.

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 modern value chains. As noted by Berdegúe 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, including credit constraints, may still prevent small producers from taking advantage of these opportunities.

Clearly, the existing rural lag in financial intermediation risks placing a country's small and medium producers at a disadvantage in realizing the gains from this transformation. This, 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 deprive them of the opportunity to enter into these new relationships, right at this entry point.

Central American participants in these arrangements have frequently been small and medium producers of a wide variety of crops. The ability of such producers to participate has been verified for tomato growers in Nicaragua (Balsevich et al., 2005 and 2006) and producers in Guatemala (Church, 2005; Reardon et al., 2005) and Mexico (Berdegué et al., 2006). The field work for this case study also verified the participation of numerous small farmers in the Hortifruti network. The producers taking part do possess 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 participation in the modern value chains has been gained as a result of proven experience in growing specific crops, developed under conditions of self-financing (the use of the producer's accumulated savings or of funds from friends and relatives, including informal loans, gifts, and remittances, which are also the outcome of savings efforts). The expansion of safe and convenient facilities for deposits and money transfers is critical for the efficacy of self-financing.

Self-financing also results from 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 produce, such as with the supermarket demand for fresh fruits and vegetables. **Liquidity management** matters, then, as it facilitates the cash flows needed to engage in self-financing. Prompt and reliable receipts of deferred payments from the buyer play a critical role in this management.

Thus, accumulated savings, informal transfers, and careful liquidity management allow extended households to invest their own resources in the upgrading needed for participation in modern 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 into the chain. These other services are not typically offered by the traditional actors in value chains. They require the presence of financial intermediaries. Moreover, when the farmers' incomes are low and amounts saved small, it takes time to accumulate the funds needed for a particular investment. Even though self-financing eventually makes the desired investment possible, it would materialize sooner when there is access to credit.

The barriers to entry related to finance are higher when participation depends on large indivisible investments (large, compared to the producer's initial wealth) and when the production technology shows increasing returns to scale. Many of the fresh fruits and vegetables demanded by supermarket chains do not exhibit these characteristics, however, and profitable opportunities actually exist for small and medium producers.

Once entry into the contractual relationship has been gained, the financial dynamics of the process allow these producers—at least those who do not experience adverse shocks—continued involvement, at least at their current levels of participation, even without access to formal credit. Especially when the relationship is accompanied by expert technical assistance, the producers learn to stagger their production and finance new cycles with the proceeds from the earlier cycles.

These revolving cash flows may not be sufficient, however, for additional investments in improving productive capacity, such as irrigation systems and greenhouses

(Chalmers, 2005a). This suggests 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 funds may evolve as a by-product of the expanded contractual relationship with the institutional buyer.

Adoption of the new practices and accompanying investments is risky. Too much producer risk aversion may have the same delaying effects as credit constraints have. Reluctance may be lowered, 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 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.

Reluctance to innovate may be reduced, even more effectively, with the development of insurance markets, such as those that offer indexed contracts (Miranda and Glauber, 1997; Skees, Hazell and Miranda, 1999). Indeed, during the field research, 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.

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.

#### **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).

There are two views on such linkages. The *buyer/supplier-direct credit* perspective 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 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 lender and borrower– of interlinked credit transactions have been extensively studied in the literature (Bell, 1988; Basu, 1995; Bardhan and Udry, 1999; Rodriguez Meza, 2003). In typical cases, the range of financial services supplied along these vertical chains (only during the cycle of production) is 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 case study 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. Frequently, instead, 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. The case study found, however, 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).

Furthermore, 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 further improves creditworthiness with formal lenders. Also, in the case of Hortifruti, weekly payments are deposited in 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.

An emerging and novel perspective —suggested by the findings of the 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.

This enhancement of the producer's creditworthiness takes place along several of the channels suggested in the conceptual framework. 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 perspective highlights some of the advantages of the new contractual mechanisms. 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.<sup>1</sup> 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 chain. In this sense, 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 enjoy a greater amount of liquidity. The chain 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. Thus, a processor that offers advances to producers willing to sell their crop only to this particular firm most likely 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 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,

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<sup>1</sup> 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.

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 loans elsewhere, the entire chain gains.

The final outcome 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 further improving their creditworthiness in the eyes of financial intermediaries.

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 advantages.

Third, from the perspective of financial intermediaries, the development of the virtuous 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 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.

### **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 agricultural producers. 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 has several 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 they 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 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 may gradually allow the farmer to gain increased access to other sources of funds.

Increased access to credit thus takes place in two steps. In the first step, participation in the new chain, per se, creates direct access to credit. That is, the supermarket would agree to finance the producer's activities in order to secure it as a reliable supplier. The producer gains access to loans or advances on the crop while engaging in a selling-purchasing contractual agreement and other linkages with the institutional buyer.

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 issuing information on the of the buyer as a borrower.

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. The producer/borrower can then *graduate* to the services of a financial intermediary. This is 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**.

#### **4. 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, 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.

This section presents salient results from the researchers' first attempt to evaluate the new hypotheses. These hypotheses are predictions about the comparative importance of direct and indirect influences that a contractual relationship with a supermarket chain may have on a farmer's financial history. The evaluation is based on interviews with Hortifruti officials, representatives of financial institutions and NGOs, and participating farmers.<sup>2</sup>

There is much **heterogeneity** among the 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. One important implication of heterogeneity is that the preconditions for participation in the new procurement arrangements may not be related to the kinds of farmer characteristics that are traditionally recorded and may be 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.

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,

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<sup>2</sup> For a detailed discussion of the operations of Hortifruti, for the design of the field work, and for an analysis of the differences among the three countries, see the original Gonzalez-Vega et al. (2006) study.

thoroughness, flexibility, precision and the like— as well as willingness to change habits and 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).

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 traits and the intangible assets associated with the new 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 here is that the assessment of creditworthiness by regular financial intermediaries should become easier.

In Costa Rica, the sample reflected 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 Hortifruti has reflected the role of this stock of human capital. The average level of schooling is seven years (it is nine for the country). In addition to advantages that

education offers in the adoption of technological innovations, higher levels of schooling also have been associated with a greater ability 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 hectares. On average, these farmers cultivate 9.3 hectares, and the median area is even smaller. Moreover, two-thirds of the growers indicated that one of the major influences of their relationship with Hortifruti was an increase in the area under cultivation, in some cases even a three-fold increase. That is, farms were even smaller when their relationship with Hortifruti began, in comparison to the size we observed. Thus, 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. However, some producers who did not own it had rented land in order to be able to work with Hortifruti. Hortifruti has developed strong alliances with several farmer associations in Costa Rica. These have included 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.

The producers interviewed come from a recent cohort of preferred suppliers. On average, their relationship with Hortifruti was 4.3 years old. The 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, in response to the demand from Hortifruti, some farmers specialized in producing a crop for which they possessed pronounced comparative advantages. The associated contractual security allowed them to stop producing other less profitable crops, which had been cultivated only in order to lower the risks of their income-generating activities. The contract lowered the risk of specialization because of the steadiness and reliability of the agreement with the institutional buyer.

In other cases, the farmers completely switched crops, to produce something that is highly demanded by Hortifruti. In other cases, the relationship allowed them to further diversify their production. In most cases, Hortifruti encouraged this diversification, both as a risk-management tool and because, once it had identified star producers, it wanted to take advantage of their unique skills as agricultural entrepreneurs and induce a more varied supply of products for which there might not be adequate levels of procurement.

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

According to the farmers interviewed, the volume of production 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 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 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. 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.

In Nicaragua and Honduras, the researchers did not have the same opportunity to observe a broad range of participating growers scattered throughout the country. This reflected constraints due to logistics and 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. 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.

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. The country's less developed infrastructure increases **transaction costs** for all the parties involved. Opportunities to participate are thus sharply reduced for producers located in remote and less accessible areas.

Density matters. Hortifruti is willing to absorb the transaction costs in those cases where there is sufficient concentration of producers. As barriers to entry, these transaction costs weight disproportionately in the case of small farmers located in remote areas. In response to transportation constraints and to meet their quotas with Hortifruti, a network of participating suppliers who collect produce from their neighbors has emerged. Important positive externalities are being generated through these indirect linkages.

In Honduras, where the Hortifruti operations are more recent (since 2001), the contractual relationships with the farmers are more developed than in Nicaragua. There is a core pool of preferred star producers, who seem to possess the right endowments of entrepreneurial attitudes, experience and willingness to innovate. 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, and are able to deliver directly to the plant in Tegucigalpa.

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 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 it to deliver several crops while meeting high standards of quality.

### **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 farmers had had access to some formal credit source (Quiros, 1991). Indeed, all the growers interviewed had used, at some point before or after they started their relationship with Hortifruti, at least one source of credit. **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 mentioned.

The financial histories of the growers 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.

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.<sup>3</sup> 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 they undertake, particularly after participation in the Hortifruti network.

The observation of a high incidence of loans from banks and cooperatives —the likely potential sources of investment credit— in the Costa Rican sample raises 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 about 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 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

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<sup>3</sup> 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. Considering all the observations in the sample, 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 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, improved.

In turn, many officers of cooperatives, banks and input suppliers confirmed the role that this information plays in 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 these have required mortgages on farm land and other real estate, which requires clear title. 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 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 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.

In Honduras, the relationship of Hortifruti with its preferred suppliers is more of a partnership than in Nicaragua. One important financial implication is a 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. 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).

In Honduras, repressive regulation has 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 (Falk, Quirós and Gonzalez-Vega, 2006).

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 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, 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 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](http://www.cca.co.cr/artman/publish/article_29.shtml)).

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. That is:

- (a) Is this pilot a template that could be further expanded downward, to reach smaller, more marginalized producers?
- (b) Can this model be replicated with other buyers (including some of CCA’s strong supermarket competitors) as well as in other countries?

Indications from bank executives 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 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**

First, a most 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 specific objective 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 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 conceptual framework 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—improves their creditworthiness, which in turn increases their access to several types of financial services. This enhancement happens through three components:
  - (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.
2. 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. Access to efficient and sustainable financial services can help in addressing the challenges and taking advantage of the opportunities.

3. The case study goes beyond the traditional view of value chain actors as *suppliers* of credit. Instead, it develops a new 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.
4. 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.

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.

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.

In contrast, the novel view documented here 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.

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 the demand of 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.

## REFERENCES

- Akerlof, George A. and J. Yellen (1986). *Efficiency Wage Models of the Labor Market*. Cambridge: Cambridge University Press.
- Alvarado, Irene and Charmel Kiupssy (2002). "The Rapid Rise of Supermarkets in Costa Rica: Impact on Horticultural Markets." *Development Policy Review*, 20(4): 473-485.
- Balsevich, Fernando, Julio A. Berdegué, Luis Flores, Denise Mainville, and Thomas Reardon (2003). "Supermarkets and Produce Quality and Safety Standards in Latin America," *American Journal of Agricultural Economics*, 85 (Number 5): 1147-1154.
- Balsevich, Fernando, Thomas Reardon, Julio A. Berdegué, Ricardo Hernández and Pilar Jano (2005). "Acceso de pequeños productores de tomate a los supermercados en Nicaragua." Unpublished document. Michigan State University.
- Balsevich, Fernando, Julio Berdegué, and Thomas Reardon (2006). "Supermarkets, New Generation Wholesalers, Tomato Farmers, and NGOs in Nicaragua". Staff Paper 2006-03, Department of Agricultural Economics. East Lansing, Michigan: Michigan State University.
- Bardhan, Pranab and Christopher Udry (1999). *Development Microeconomics*. Oxford: Oxford University Press.
- Barrantes, G., E. Castro, F. Sáenz, and P. Roebeling (1998). "Administración de recursos naturales y el efecto de los costos ambientales en los ingresos: Un enfoque contable a nivel de finca." In *Políticas agrarias para el uso sostenible de la tierra y la seguridad alimentaria en Costa Rica*. Heredia, Costa Rica: Centro Internacional de Política Económica, Universidad Nacional: 73-86.
- Basker, E. (2005). "Job Creation or Destruction? Labor-Market Effects of Wal-Mart Expansion." *Journal of Economics and Statistics*, 87 (1): 174-183.
- Basker, E. and P. H. Van (2006). "Putting a Smiley Face on the Dragon: Wal-Mart as Catalyst of US-China Trade." Paper presented at the Meetings of the Allied Social Sciences Association, Boston, MA, January 6-8. <http://economics.missouri.edu/~baskere/papers/Dragon.pdf>
- Basu, Kaushik (1995). "Rural Credit and Interlinkage: Implications for Rural Poverty, Agrarian Efficiency, and Public Policy." *Critical Issues in Asian Development. Theories, Experiences and Policies*. M. G. Quibria (ed.), Oxford: Oxford University Press.

- Bate, Peter (2005). "A Growing Alliance. Supermarkets Turn Dirt Farmers into Rural Entrepreneurs." *Microenterprise Americas*. Washington, D.C.: The Inter-American Development Bank.
- Bell, Clive (1988). "Credit Markets and Interlinked Transactions." In Hollis B. Chenery and T.N. Srinivasan (eds.). *Handbook of Development Economics, I*, Amsterdam: North Holland.
- Beneke de Sanfeliú, Margarita and Claudio Gonzalez-Vega (2000). "Dynamics of Rural Household Incomes in El Salvador: 1995-1997." Paper submitted for the Annual Meetings of the Latin American and Caribbean Economics Association.
- Berdegúe, Julio A., Fernando Balsevich, Luis Flores and Thomas Reardon (2003). "The Rise of Supermarkets in Central America: Implications for Private Standards for Quality and Safety of Fresh Fruits and Vegetables." Document prepared for USAID/RAISE/SPS.
- Berdegúe, Julio A., Fernando Balsevich, Luis Flores and Thomas Reardon (2005). "Central American Supermarkets' Private Standards of Quality and Safety in Procurement of Fresh Fruits and Vegetables." *Food Policy*.
- Berdegúe, Julio, Thomas Reardon, Fernando Balsevich, Anabel Martínez, Rubén Medina, Max Aguirre, and Flavia Echánove (2006). "Supermarkets and Michoacán Guava Farmers in Mexico", Staff Paper 2006-16, Department of Agricultural Economics. East Lansing, Michigan: Michigan State University.
- Cavallini Sandoval, Jorge (2004). Panel presentation on "Desarrollo empresarial: La respuesta de los pequeños productores a la globalización de los mercados agrícolas." VII Microenterprise Forum, organized by the Inter-American Development Bank, Cartagena de Indias, Colombia.
- Chalmers, Geoffrey (2005a). "Big Buyer Helps Small Growers." Note from the Field. Managua: USAID/Nicaragua.
- Chalmers, Geoffrey (2005b). "Upgrading and Learning Opportunities while Jumpstarting Markets. Can The Small Guys Really Compete?" Presentation at the VIII Microenterprise Forum, organized by the Inter-American Development Bank, Santa Cruz de la Sierra, Bolivia, October 6, 2005. [ [www.microlinks.org/pastevents](http://www.microlinks.org/pastevents) ]
- Christen, Robert Peck and Douglas Pearce (2005). "Managing Risks and Designing Products for Agricultural Microfinance: Features of an Emerging Model." CGAP Occasional Paper No. 11. Washington, D.C.

- Church, Philip E. (2005). “New Standards and New Relationships: How Microenterprise Producers Adapt to Higher Quality Standards in Guatemalan Horticulture.” Presentation at the VIII Microenterprise Forum, organized by the Inter-American Development Bank, Santa Cruz de la Sierra, Bolivia, October 6, 2005. [ [www.microlinks.org/pastevents](http://www.microlinks.org/pastevents) ]
- Conning, Jonathan and Christopher Udry (2005). “Rural Financial Markets in Developing Countries,” in R. E. Evenson, P. Pingali, and T. P. Schultz (eds.), *The Handbook of Agricultural Economics, Vol. 3, Agricultural Development: Farmers, Farm Production and Farm Markets*. Forthcoming, North Holland.
- Downing, Jeanne, Michael Field, and Olaf Kula (2005). “Linking Small Firms into Value Chains: An Economic Growth with Poverty Reduction Strategy.” Document prepared for the AMAP BDS Knowledge and Practice, Washington, D.C.: Agency for International Development.
- Dunn, Elizabeth (2005). “Enhancing Value Chain Competitiveness and MSE Benefits through Better Relationships and Learning: A Framework.” Presentation at the VIII Microenterprise Forum, organized by the Inter-American Development Bank, Santa Cruz de la Sierra, Bolivia, October 6, 2005. [ [www.microlinks.org/pastevents](http://www.microlinks.org/pastevents) ]
- Falk, Mayra et al. (2005). “Oportunidades de crear vínculos y alianzas para masificar los servicios financieros rurales: El caso de la Fundación José María Covelo en Honduras.” Zamorano, Honduras.
- Falk, Mayra, Rodolfo Quirós y Claudio Gonzalez-Vega (2006). “Opportunities for the Creation of Linkages and Alliances to Expand the Supply of Rural Financial Services: The Case of the José María Covelo Foundation and its Partner Organizations in Honduras. Rome: FAO and Ford Foundation.
- Fries, Robert and Banu Akin (2004). “Value Chains and their Significance for Addressing the Rural Finance Challenge.” microReport # 20. Washington, D.C.: United States Agency for International Development.
- Goldmark, Lara and Ted Barber (2005). “Trade, Micro and Small Enterprises, and Global Value Chains.” microReport # 25. Washington, D.C.: USAID.
- González, Adrian and Claudio Gonzalez-Vega (2003). “Sobreendeudamiento en las Microfinanzas Bolivianas, 1997-2001.” Document prepared for the USAID Mission in Bolivia. La Paz, Bolivia.

- Gonzalez-Vega, Claudio (1973). "Small Farmer Credit in Costa Rica: The Juntas Rurales," in *Small Farmer Credit in Costa Rica*, AID Spring Review of Small Farmer Credit, Washington, D.C.: U.S. Agency for International Development.
- Gonzalez-Vega, Claudio (2003a). "Deepening Rural Financial Markets. Macroeconomic, Policy and Political Dimensions." Paper presented at Paving the Way Forward for Rural Finance. An International Conference on Best Practices. Washington, D.C.: United States Agency for International Development (USAID).
- Gonzalez-Vega, Claudio (2003b). "Lessons for Rural Finance from the Microfinance Revolution". In Mark D. Wenner, Javier Alvarado and Francisco Galarza (eds.), *Promising Practices in Rural Finance. Experiences from Latin America and the Caribbean*. Washington, D.C.: Inter-American Development Bank, Centro Peruano de Estudios Sociales and Academia de Centroamerica.
- Gonzalez-Vega, Claudio, Jorge Rodríguez-Meza, Douglas Southgate, and Jorge Maldonado (2004). "Poverty, Structural Transformation, and Land Use in El Salvador: Learning from Household Panel Data," *American Journal of Agricultural Economics*, 86, pp. 1367-1374.
- Gonzalez-Vega, Claudio, Anabella Lardé de Palomo, Miguel Loría, Ronulfo Jiménez, and Rodolfo Quirós (2003). "The Environment of Rural Financial Markets in Costa Rica and El Salvador." In Mark D. Wenner, Javier Alvarado and Francisco Galarza (eds.), *Promising Practices in Rural Finance. Experiences from Latin America and the Caribbean*. Washington, D.C.: Inter-American Development Bank, Centro Peruano de Estudios Sociales and Academia de Centroamerica.
- Gonzalez-Vega, Claudio and Marcelo Villafani (2004). "Las Microfinanzas en el Desarrollo Financiero de Bolivia." Document prepared for the PREMIER project. La Paz, Bolivia.
- Irwin, Elena G. and Jill Clark (2006). "The Local Costs and Benefits of Wal-Mart." Columbus, Ohio: The Ohio State University, Department of Agricultural, Environmental and Development Economics. <http://aede.osu.edu/programs/ComRegEcon/retail.htm>
- Joshi, Mukta (2005). Access to Credit by Hawkers. What is Missing? Theory and Evidence from India. Ph.D. dissertation, Department of Agricultural, Environmental and Development Economics. Columbus, Ohio: The Ohio State University.
- King, Robert G. and Ross Levine (1993). "Finance, Entrepreneurship and Growth. Theory and Evidence." *Journal of Monetary Economics* (32):513-542.

- Lardé de Palomo, Anabella, Claudio Gonzalez-Vega and Aída Argüello de Morera (2000). "Household Integration to Markets as a Determinant of Rural Incomes in El Salvador." San Salvador: FUSADES.
- Levine, Ross (1997). "Financial Development and Economic Growth: Views and Agenda." *Journal of Economic Literature*, Vol. XXXV (June): 688-726.
- Medlicott, Andrew (2005). Panel presentation on "Technological Innovations Serving the Needs of Rural Microenterprises," at the VIII Microenterprise Forum, organized by the Inter-American Development Bank, Santa Cruz de la Sierra, Bolivia, October 6, 2005.
- Miranda, Mario and Joseph Glauber (1997). "Systemic Risk, Reinsurance, and the Failure of Crop Insurance Markets." *American Journal of Agricultural Economics*, (79): 209-215.
- Monge-González, Ricardo, Miguel Loría, and Claudio Gonzalez-Vega (2004). *Retos y oportunidades para los sectores agropecuarios y agroindustrial de Centroamérica ante el Tratado de Libre Comercio con los Estados Unidos*. San José, Costa Rica: Academia de Centroamérica.
- Monge-González, Ricardo, Claudio Gonzalez-Vega and Francisco Monge-Ariño (2004). *Impacto del CAFTA sobre las ventajas comparativas de Centroamérica*. San Jose, Costa Rica: Academia de Centroamérica.
- Montero, M. (2001). *Supermercadismo: Industria sin competencia*. San Jose, Costa Rica: CACIA.
- Pleitez, Rafael (2004). "Remittances as a Strategy to Cope with Systemic Risk: Panel Results from Rural Households in El Salvador." Ph.D. Dissertation, Department of Agricultural, Environmental and Development Economics. Columbus, Ohio: The Ohio State University.
- Quirós, Rodolfo (1991). "Access to Agricultural Credit in Costa Rica. A Multinomial Logit Analysis." Master's thesis. The Ohio State University. Columbus, Ohio.
- Quirós, Rodolfo (2005). "Financiamiento de la comercialización de productos agrícolas en América Latina. El caso de Costa Rica." Report for the Food and Agriculture Organization (FAO). San Jose, Costa Rica: Academia de Centroamérica.
- Quirós, Rodolfo and Claudio Gonzalez-Vega (2006). "Institutional Transformation as a Path toward Improved Opportunities for Linkages that Enhance Rural Access to Financial Services. The Case of the Fundacion Integral Campesina in Costa Rica." Document prepared for the FAO/Ford Foundation Study of Linkages. Rome: FAO and Ford Foundation.

- Reardon, Thomas (2005). "Customizing Market Development Strategies: New Paths to Rural Development in Central America." Staff Paper No. 2005-01. Department of Agricultural Economics. Michigan State University.
- Reardon, Thomas and Julio A. Berdegue (2002). "The Rapid Rise of Supermarkets in Latin America: Challenges and Opportunities for Development." *Development Policy Review*, 20(4): 317-334.
- Reardon, Thomas, Julio A. Berdegue, Fernando Balsevich, Luis Flores and Ricardo Hernandez (2005). "Supermarkets and Small Produce Growers in Central America." Pre-conference Workshop on Supply Chains and Farmers, Meeting of the European Association of Agricultural Economists, Copenhagen, August.
- Rodríguez-Meza, Jorge (2003). "Panorama Financiero de las Industrias del Café y de la Caña de Azúcar," en Grettel Lopez and Juan Carlos Obando (eds.), *Ensayos en Honor a Claudio Gonzalez Vega*. San Jose, Costa Rica: Academia de Centroamerica.
- Sescosse Varela, Manuel (2005). "La Banca Comercial y las Microfinanzas." Presentation at the IV Annual National Meeting of Microfinance in Mexico, organized by PRONAFIM, San Juan del Rio, October.
- Skees, Jerry, Peter Hazell and Mario Miranda (1999). "New Approaches to Crop Yield Insurance in Developing Countries". Rural Finance Program Working Paper. Columbus, Ohio: The Ohio State University.
- Shepherd, Andrew W. (2004). *Financing Agricultural Marketing. The Asian Experience*. AGSF Occasional Paper 2. Rome: Agricultural Management, Marketing and Finance Service. Agricultural Support Systems Division. Food and Agriculture Organization of the United Nations.
- Vakis, Renos, Diana Krueger and Andrew Mason (2004). "Shocks and Social Protection: Lessons from the Central American Coffee Crisis. Report No. 31857. Washington, D.C.: The World Bank.