

Analyzing and Financing Value Chains: Cutting Edge
Developments in Value Chain Analysis

By

Richard L. Meyer

Presentation at the

3rd African Microfinance Conference: New Options for
Rural and Urban Africa

Kampala, Uganda, 20-23 August 2007

INTRODUCTION

Developing rural financial systems has proven to be very challenging in Africa. Many countries have implemented financial sector reforms designed to create viable financial institutions, increase the supply of financial services for unbanked segments of the population, and stimulate competition to reduce the costs of financial services. Considerable progress has been made in some countries in expanding urban microfinance, but progress has been slower in reaching rural areas and especially farmers. There is a widespread perception that there is less agricultural credit available today in most countries, especially for the poor, compared to the situation prior to the financial reforms. Agricultural marketing companies are becoming more important in supplying credit for small farmers, especially for the export crops of cotton, tea and tobacco.¹ Microfinance institutions (MFIs) are beginning to play a role in rural finance, but there is a concern that farmers cannot pay the high interest rates they typically charge for loans. This situation has prompted some countries in Africa and elsewhere to propose the reintroduction of government-owned financial institutions and other measures designed to enhance the supply of financial services in rural areas.

There is a great deal of enthusiasm today for using the value chain approach as an additional tool to tackle the stubborn agricultural finance problem (USAID/ AMAP, 2005). Integrated economic activities are increasingly the norm in the world economy. Integration involves both the financial and non-financial sectors with the objective of facilitating a smooth flow of commodities and services from producers to consumers within clusters of activities or sub-sectors. Value chain analysis is one way of analyzing how these activities are organized and how they can be improved for the benefit of developing countries. In this paper, I highlight some key features of value chain analysis, provide some examples of agricultural value chains, and suggest how this analysis can help identify interventions to expand financial services to farmers and rural communities. I will give special emphasis to problems of reaching small farmers.

WHAT IS A VALUE CHAIN?

A value chain encompasses the full range of activities and services required to bring a product or service from its conception to its end use (Figure 1). It involves the sequence of productive (i.e. value added) activities leading to and supporting final use. Other terminology includes supply chain, commodity chain, production chain, activities chain, and product pipeline (Sturgeon, 2001). The term commodity sub-sector originated with agricultural marketing specialists because they are mostly based on a key agricultural input or commodity while business development practitioners tend to use the term value chains (Haggblade, 2007).

¹ An IFAD (2003) study documented the role of marketing companies in providing small farmer credit in Kenya, Zambia, and Mozambique.

A value chain exists within a complex set of institutions and support industries that are important in affecting its performance. Agriculture draws heavily on these related institutions and industries. For example, agricultural value chains receive important public sector human resource inputs from universities and research centers for the development and dissemination of new technologies. Agriculture requires infrastructure inputs in the form of roads, energy, water, communications and ports. Capital inputs include land, fences, irrigation systems, production and processing equipment, and trucking. Service inputs include construction, transportation, consulting, and information, particularly about prices and market opportunities. For the poor, financial services in the form of additional working capital may be critical for them to fully participate in the production of some commodities. Leasing and term finance may be required for both farmers and agribusinesses to upgrade and modernize production and processing facilities for agricultural commodities.

A first step in value chain analysis is the creation of a schematic map of all the relevant actors, institutions and support institutions. This map is prepared by consulting secondary sources and interviewing key informants.² The map highlights the relationships among different categories of producers and alternative supply channels (Haggblade, 2007). The degree of detail contained in the map is influenced by the objectives of the analysis. Maps for commodities that are transacted only in domestic markets contain national actors, while maps for commodities sold in international markets include actors within and outside the country that are important in regional or international trade.

Financial relationships are highlighted in chains when finance is a central focus of the analysis. When the purpose is to understand the opportunities and constraints that exist for small farmers to participate in the chain, the chain is decomposed into competing vertical routes or channels and into the different products supplied by small versus large farmers. The channels are important because they may show how farmers can increase their returns by moving from a low value channel to a higher value one.

Two examples of agricultural sub-sector or value chain maps prepared for Zambia are shown in Figures 2 and 3 (Chitundu, et al., 2006). Figure 2 represents a simple sub-sector map for paprika. It emphasizes different channels for rain fed, irrigated and commercial farmers and includes data about volumes and prices. Figure 3 refers to analysis being conducted for expanding cassava markets. This map was designed to highlight the actors involved in the production, processing and sale of various types of cassava products in domestic and foreign markets.

² Several guides explain how to conduct value chain analysis. One of the more recent was produced by Kaplinsky and Morris, 2001.

WHAT IMPORTANT ANALYTICAL ISSUES ARE BEING ADDRESSED IN VALUE CHAIN ANALYSIS?

At least six sets of issues are being analyzed using value chain analysis:

1. Vertical coordination – Specialization requires vertical coordination between the firms that supply inputs or purchase outputs. Value chain analysis emphasizes power relationships and alternative governance structures for coordinating these vertical relationships.

2. Competition across industries - A horizontal slice across a value chain map identifies an industry consisting of a group of actors that compete to perform the same function. Analyzing these slices can highlight competitive relationships that emerge between different types and sizes of firms and between firms using different technologies.

3. Value chain dynamics - Cost and quality advantages stimulate growth and expansion in some channels, while less competitive ones atrophy and may disappear. As some channels grow at the expense of others, there are incentives for producers to switch from one to another. Business development practitioners use these dynamics to identify the most promising niches for their client groups.

4. Governance – Value chains involve repetitive interactions among actors, and governance implies that these interactions reflect some degree of organization rather than simply being random. Non-market coordination of economic activities is required to guide and control activities in the chain. Parameters and standards need to be set regarding products and processes up and down the chain. A division of labor is required and the various actors monitored and coordinated to achieve the desired final result. Power is implied in performing these functions. For buyer-driven chains, which characterize much of today's modern export agriculture, the critical governing role is often played by a lead firm at the apex of the chain. Lead firms often have the best access to information about evolving demands in the market place and, therefore, may play a key role in upgrading value chains to improve competitiveness and move into higher value activities.

5. Distribution of incomes - Profits are earned by the value chain actors as commodities move from producers to consumers. The way that profits are appropriated among the value chain actors is important in influencing the extent to which small farmers and the poor receive benefits. One of the objectives of some value chain analyses is to determine ways to improve the profits of small-scale farmers, processors and traders and the distribution of incomes earned in the chain.

6. Leveraged interventions – Value chain analysis is often conducted with the objective of identifying key pressure points for cost-effective interventions that will unleash growth opportunities for a large numbers of firms. Policy and regulatory changes may offer the advantage of assisting many firms with the stroke of a pen. Improving input supplies, creating new sub-products, and breaking into new markets may also be important.

Upgrading chains often requires investment so improving access to financial services may be an important intervention, at either the level of the producers or at higher levels in the channels.

HOW IS VALUE CHAIN ANALYSIS USEFUL IN IDENTIFYING AND DESIGNING FINANCIAL INTERVENTIONS?

Analyzing financial institutions, the products they deliver, and the constraints and distortions they confront through a product market orientation is expected to yield insights into the challenge of supplying rural financial services beyond what can be learned in a typical financial systems analysis (Fries and Akin, 2004). When analyzing a value chain for financial purposes, we are interested in three interrelated questions. First, how are transactions between actors *within* the chain currently being financed? Second, what type of formal finance, if any, is being provided by financial institutions *outside* the chain? Third, are there ways that financing can be improved for the benefit of some or all of the actors in the chain?

In value chain analyses, the financial component is often relatively weak compared to other dimensions of the chain. I will suggest some ways to think about making the analysis a bit more useful in understanding financial relationships and in identifying possible interventions to strengthen both the value chain and financial markets. To simplify, I will concentrate on credit which is the focus of most analysis. But as we know, value chain actors may also gain important benefits from improved supplies of savings, insurance and remittance services.

First, we need to introduce a framework for thinking about finance. Actors within chains are financed in three ways. First, and most typical in agriculture, the actors and especially farmers *self-finance* their operations through savings. Second, *direct* value chain finance occurs in the form of *informal finance* when an actor other than a financial institution provides some form of financing to another *within the chain*. These transactions are usually more frequent than formal loans and are often entered into with a simple handshake.³ Examples include input suppliers who sell fertilizer to farmers on credit or commodity traders who supply cash advances so rural storekeepers can acquire commodities from farmers. Third, financial institutions *outside the chain* supply *indirect formal financial services* to one or more actors in the chain. These transactions require a formal contract and often involve a form of collateral or co-signor. In the case of MFIs, these may be group rather than individual loans. Therefore to fully understand how a value chain is financed, we need to consider all three types of finance.

³ Pearce (2003) reports several examples in which traders, processors, input suppliers, exporters, and moneylenders are the primary source of credit for poor agriculture-dependent households.

No explicit detailed framework or methodology has been developed for analyzing value chains through a financial lens.⁴ Using a financial lens implies studying both the supply and demand for financial services. Financial transactions do not occur unless there is both a supply and effective demand for them. Effective demand exists when there are borrowers willing and able to repay loans.

The suppliers of finance, either informal or formal, share a common problem. To be successful, they must overcome the information asymmetries involved in evaluating whether borrowers can and will repay, and managing the related high operating costs and risks. The input suppliers or traders who make informal loans in cash or inputs in kind against the farmer's promise to deliver products at harvest time face the same problems as other lenders. They must decide who to lend to (screening), how to monitor the performance of their borrowers, and how to successfully collect their loans (contract enforcement). This is also true when regional and national traders consider making loans to local traders who bulk products to be used in processing or for export.

Informal value chain finance, however, is different from formal finance because it often creates a "two way street" through interlocking transactions⁵ which bind both lenders and borrowers through their financial and product market relationships. Informal lenders are primarily motivated by a product market objective, such as selling their inputs or ensuring a supply of commodities for their trading and processing activities. But they may offer credit to their clients as a means to achieve that goal even though they might prefer to use their scarce capital for other purposes.

At the same time, borrowers are often dependent upon value chain lenders to supply inputs or to access markets as well as provide credit. Before deciding to borrow informally on this "two way street", the borrowers must evaluate the probability that the lenders will actually fulfill their part of the agreement, such as supplying the promised inputs on time, buying the product at harvest, and paying on a timely basis and at a competitive price. Frequently, credit worthy actors higher up within a chain can relax their financial constraints by borrowing formally, and then use these additional resources to make informal loans to their clients located lower in the chain.

Informal lenders may also have some transaction cost advantages compared to formal lenders. For example, while conducting their normal product market transactions they observe how their clients operate their businesses, and may even learn how well they manage their finances. They have an important disadvantage, however, compared to financial institutions because of their own liquidity constraints, especially when they are experience rapid growth, so they may lack the resources required to lend.⁶ Therefore,

⁴ Villeda and Hansel (2005) argued that a value-chain analysis conducted with a financial services lens is an analysis "that pays attention to the role of financial services within value chains, rather than solely within financial systems" (p.15), but did not define what such an analysis might be composed of.

⁵ See footnotes 1 and 3.

⁶ Gonzalez-Vega, et al.,(2006) report how the emergence of production contracts between a supermarket and farmers increased the farmers' credit worthiness so they could more easily obtain formal loans to help finance the production costs involved in fulfilling the contracts.

they usually limit their loans to working capital for the specific value chain commodity, and rarely make medium or long term loans.

Comparing value chains helps us evaluate how financial and product market relationships enable successful financial transactions to occur between one pair of actors in a value chain, but unsuccessful between another pair of actors, or successful in one value chain but unsuccessful in another. Analyzing informal financial transactions within value chains may reveal information about the potential for formal financial institutions to supply financial services from outside of the financial system. Normally, successful informal financial transactions occur long before formal financial institutions begin making loans, and formal lenders often use the experience of successful informal finance to help design their products. Analysis may reveal opportunities where financial institutions can partner with actors within the chain to produce benefits for both parties, such as when cooperatives deduct loan payments owed to input suppliers from the value of the commodities delivered by farmers.

Based on this framework, an analysis of a value chain using a financial lens could involve some or all of the following five analytical components:

1. Identify and describe the nature of the informal financial relationships found between two or more actors within the value chain, and the formal financial services provided by financial institutions outside the chain.
2. Outline the key features of the verbal and written financial contracts used in value chain financing.
3. Analyze how the basic financial functions of client screening, monitoring and contract enforcement are successfully performed in informal and formal finance.
4. Analyze how the legal system, financial infrastructure, and social norms and customs support or impede informal and formal financial transactions within value chains.
5. Identify how government policies and donor interventions could contribute to expanding and strengthening value chain financing.

THREE EXAMPLES OF THE FINANCIAL ANALYSIS OF VALUE CHAINS

In this section, I will briefly describe examples in which some of these ideas were incorporated into three analyses of the financing of agricultural value chains.

Artichokes in Peru

The first example is an analysis of the processed artichoke value chain in Peru (Campion, 2006). The purpose was to evaluate the constraints that limit Peru's competitiveness and its ability to increase its market share in the rapidly expanding world market for this product. The value chain map produced in the study (Figure 4) lists the key functions beginning with the supply of inputs and extension services up through retailing in local and foreign markets. Small and large farmers are separated because

different types of input suppliers serve the two size groups. Many within-chain informal financial flows are reported, and some formal financial services are being supplied from outside the chain.

A table was prepared to summarize the current supply of finance and potential demands at each level (Table 1). The first impression is that financial services are quite abundant. Closer examination, however, revealed several areas of potential demand. Self-financing represents the vast majority of financing in the chain. Wholesalers, processors and input suppliers work together to provide short-term finance and technical services to help farmers develop the skills and knowledge required to produce greater quantities of high quality product. Processing plants provide artichoke seedlings in kind and the value is deducted at harvest. The plants also supply technical assistance to farmers to improve the probability that they will fulfill their contracts with wholesalers. Processors have fixed price contracts with wholesalers so they offer three to five year contracts to farmers in exchange for an agreement to buy their product at set quality standards.

The greatest constraints reported in the chain are the difficulty of convincing farmers to grow this new crop and their lack of finance to make investments. The most serious financial constraint for small farmers was reported to be the lack of capital to finance investments in irrigation systems. In spite of strong competition among processors, the risk of side selling is reduced because farmers develop close relationships with their specific extension agents. Even though informal finance is widespread, it was reported that the local financial institutions are reluctant to lend. Some are beginning to show interest in the sector, however, because it has been demonstrated that some actors have been able to generate dependable profits. A lack of formal finance limits investments that could upgrade and improve the competitiveness of the chain. The study did not inquire deeply into the reasons for the financial institutions' negative perceptions about the chain.

Sunflowers in Uganda

The second example is the value chain for the sunflower sub-sector in Uganda (Figure 5) (Meyer, Johnston and Curtis, 2006). Over 30,000 small farmers grow sunflowers in the northern part of the country, but their production meets only about 35 to 40 percent of total domestic cooking oil demand. The balance is supplied by imported palm and soybean oil. Mukwano Industries processes most of the imported oil and is attempting to stimulate sunflower production by importing improved seed that produces a higher crop and oil yield. To date, however, it has been able to import only a fraction of the seed required to satisfy the demands of the 20,000 farmers who desire it.

Small and medium size oilseed presses buy local varieties to produce oil for local markets. Many belong to the Uganda Oilseeds Producers Association (UOSPA) created several years ago to improve the sector. UOSPA lent donor funds to the millers so they could expand their businesses and offer loans to farmers. However, because of rampant side selling, almost all the funds were lost so the presses continue to be undercapitalized,

cannot improve their volume or quality, and face difficulties in competing to buy farmer harvests or to hold oil inventories to earn higher prices.

Mukwano signs contracts with farmers at the beginning of the growing season which stipulates the minimum prices that will be paid for sunflowers that meet its minimum quality standards. Farmers agree to deliver their crop at harvest, but there have been cases of side selling which prompted Mukwano to threaten to deny the offenders access to future seed supplies. Farmers must pay cash for the seed when Mukwano collects orders in the spring. Moreover, Mukwano does not want to handle fertilizer, so farmers must find ways to self-finance the costs of both seed and fertilizer if they want to take full advantage of the new variety and improved market.

A branch of a domestic bank has begun to make farm loans in the region but so far has chosen to reduce its risk by lending to farmers producing river-irrigated rice. Local MFIs lend to small-scale wholesalers and retailers that trade in oil produced from the traditional varieties of sunflowers. They still have ample opportunities to expand microloans to non-farm businesses so are not eager to enter into agricultural lending. Mukwano supplies some dealers with inventory credit in order to stimulate their oil sales.

Modernization and expansion of this value chain is constrained by many factors including the lack of informal and formal finance. The problems include production risks in this rain fed agricultural region, difficulties in getting farmers to respect production contracts, a lack of capital by the small and medium presses to meet their own investment and working capital needs, previous bad experiences in trying to recover cash advances made to farmers, and Mukwano's inability to acquire larger stocks of hybrid seed and its reluctance to supply production inputs on credit. Moreover local banks and MFIs are hesitant to finance the chain except for low risk short-term loans to wholesalers and retailers. Although credit needs can be identified throughout the chain, there is no quick and easy solution to resolve the credit constraints. Several production and processing problems need to be resolved before lenders will be induced to expand lending.

Sugar cane in Uganda

The sugar cane industry in Uganda provides the third interesting example of value chain financing (Meyer, Johnston and Curtis, 2006). It is frequently expected that the estates will be able to access commercial credit and in turn will finance most of the costs of outgrower production as occurs with major export crops such as tobacco and tea. The bulkiness of sugar cane and the high costs of transport limit opportunities for side selling so it is expected that estates can easily recover loans made to outgrowers. However, the situation on the ground is more complex.

The country's three large estates produce sugar to meet about 80 percent of total domestic demand and are in the process of expanding to substitute for the remaining imports. Land constraints limit production on the estates so they must expand purchases from farmers. The value chain map for one estate (Figure 6) shows that in addition to its own production, it buys cane from three types of farmers: non-contract farmers, unaided

contract outgrowers who self-finance their production, and aided contract growers who receive in-kind credit for land preparation, seed and fertilizer and some cash credit for harvesting and transporting the cane. The outgrowers were organizing an NGO and were considering creating a savings and loan cooperative (SACCO) or partnering with an MFI or bank to access cash loans that the estate will not supply. The estate was in the process of being restructured prior to privatization so it received commercial and subsidized financing from several sources. Little credit is supplied to the sugar wholesalers and retailers.

The normal cane processing operations were disrupted in 2004 and 2005. In 2004, an overproduction of cane and illegal sugar imports undercut domestic sales and prices. The estate decided to buy lower cost cane from non-contract farmers and deferred the harvest of contracted farmers for several months, a decision that caused severe cash flow problems for the growers. In 2005, there was a surge in cross border trade in local alcohol so the jaggery mills that operate small portable mills aggressively purchased cane. Many contract farmers sold to them to take advantage of this attractive source of cash and to avoid the cost of transporting cane to the estate's mill. As a result, the default rate on estate loans to aided farmers increased to 25 percent.

The sugar cane estates need to stabilize their relationships with farmers in order to successfully expand. On the one hand, the estates have great power because farmers have few alternative places to sell cane. On the other hand, if the estate breaks its contracts as occurred in this case, farmers will react by not growing cane, or selling it elsewhere when the opportunity arises. Even though the estate may supply most inputs needed for cane production, there are opportunities for MFIs and banks to provide other financial services. For example, once the estate is privatized, it may be possible for a lender to partner with it and locate an office at the mill. Perhaps the estate will even agree to help the lender reduce its costs and enforce its contracts by deducting loan payments from the value of the cane delivered by farmers.

ISSUES RAISED BY THE ANALYSIS

The analysis in these three examples revealed several types of within-chain and outside the chain finance. However, some actors appear to be credit constrained and candidates for more credit. Problems were also identified where nonfinancial assistance is even a higher priority in order for the chain to function more smoothly and to improve its competitiveness.

Many issues are raised by these examples. I will focus on four.

First, side selling and a general lack of respect for contracts represents a major challenge for contract enforcement for both formal and informal finance. To minimize the problem, some progress is being made in expanding the use of warehouse receipts so that farmers and traders can increase their credit worthiness by using stocks of storable commodities as collateral for their loans. An interesting example is being implemented

for maize farmers in Eastern Uganda (Meyer, Johnston and Curtis, 2006). A necessary condition is that the post-harvest commodity price increases must be large enough to cover the costs of interest and storage. The complications include the fact that prices may not increase sufficiently in all years to generate a profit through storage, and the components of the system must be carefully designed to ensure sustainability.⁷ Moreover, the smallest farmers will not likely use these systems for their small stocks, but they may benefit indirectly if the system introduces more competition among traders. The additional liquidity provided by banks against the traders' stocks may enable them to pay farmers cash at the time of purchase rather than offer promises of future payment (which they sometimes "forget" to make).

This example points to a second issue. Enhancing a value chain can be a two edged sword for small farmers. On the one hand, through the chain they may gain improved access to technical information, production inputs and markets. On the other hand, the most benefits may be reaped by larger farmers or by actors higher up in the chain. This fact poses a dilemma for business development service providers and others committed to strengthening agriculture and reducing rural poverty. Should they focus their efforts, including improving access to finance, by working with large farmers and actors higher up in the chain with the expectation that benefits will trickle down to small farmers? Or should they directly aid small farmers to improve their production and help them organize into groups, associations, and cooperatives so they can increase their bargaining power by bulking their individual harvests into larger lots?

A third issue is that traders, processors and other intermediaries are interested in reducing their transaction costs by dealing with a smaller rather than a larger number of suppliers. It difficult for them to meet food safety certification requirements for export markets if they purchase supplies from a large number of independent producers. Likewise, it is a challenge for service providers to achieve sustainability in working with a large number of clients, many of whom are not accustomed to paying for services. Large commercial banks have abundant resources for lending compared to smaller institutions but their high cost structures impede making many small loans. These problems have led to a search for partnerships, alliances and linkages among financial institutions and with value actors. The underlying concept is a search for complementarity so that each member in the agreement engages in what it does best and together they provide more financial and nonfinancial services more cheaply with less risk than if each tried to perform all functions alone. Several models for these relationships are reported in recent publications.⁸ Experience shows that the potential is

⁷ See USAID, AMAP (2006) for a discussion of the principles of the design of a warehouse receipts system.

⁸ The March 2006 issue (vol. 17, No. 1) of the Small Enterprise Development journal carries several articles on successful linkages between formal and informal financial institutions. Diaz and Hansel (2007) provide a detailed account of the challenges encountered in developing four risk-sharing models tested by SEEP members in India, Paraguay and Peru. Value chain financing mechanisms involving partnerships were presented at two recent FAO co-sponsored conferences. One was the international conference on Agricultural Revolution: Financing the Agricultural Value Chain held in Mumbai India, March 15-17, 2007. The contents are posted at www.ruralfinance.org. A summary of the second is available as Quiros (2007). Additional examples are found in Christen and Pearce (2005), and Nagarajan and Meyer (2005).

great for these arrangements but the task of designing and making them work efficiently is not simple.

The fourth issue is to help financial institutions improve their capacity to serve large numbers of rural clients. Even though value chain analysis may identify credit constraints and effective demand, financial institutions must evaluate the credit worthiness of potential clients. An important first step in this direction was taken by Pelrine and Besigye (2005) in an analysis of maize, sunflower and cotton value chains in Uganda. They collected detailed data and made estimates of the profitability at each transaction point in the chains. Their estimates showed that the returns were large enough at various levels so the actors could repay credit if they borrowed at the terms and conditions currently set by one of the local banks. Since price information was available for several crop years, the results could be interpreted with some confidence.

This type of additional information is useful in reducing the knowledge gap of lenders who associate all agricultural finance with the same high risk as expected from financing rain fed agriculture (Pelrine, 2007). In fact, although risk may be relatively high for lending to farmers, other actors in the chain can be quite credit worthy when borrowing short-term loans for marketing and processing the same crop. As these actors grow and become more competitive, the entire chain may improve leading to more generous returns and reduced risks at several levels. Moreover, it may be easier to develop risk mitigating strategies at higher levels in the chain than at the producer level.

Sustainable lending to small farmers in the chain requires a detailed analysis of their debt repayment capacity. Unless the production and price risks are adequately controlled, lending to single-crop farmers is generally expected to be sustainable only in special circumstances.⁹ Most small farm households, however, generate income from a variety of sources, not just from the value chain commodity. Therefore, a cash flow analysis of the entire farm household helps evaluate debt repayment capacity under different assumptions of commodity yields and prices. Small farm lending can be successful in many situations where returns are low and uncertain for some commodities. The key to success is identifying the sources of income that the farmer will use to repay the loan if yields or prices are less favorable than predicted in the value chain analysis. These sources could be as diverse as other crops, sales of poultry and animals, off-farm work and remittances. Cash flow analysis allows the lenders to determine how much to lend and the terms and conditions for the loans.

Individual lending based on cash flow analysis may seem daunting to institutions accustomed to making group loans.¹⁰ However, it is widely used in Latin America¹¹ and

⁹ Wittlinger and Tuesta (2006) report on how the favorable production, price and value chain organization in Paraguay permits a bank to successfully make loans to single crop soybean farmers.

¹⁰ The ShoreCap Exchange/MicroSave Virtual Conference on Cashflow Based Individual Lending scheduled for 15-17 August 2007 suggests this is an important concern for the microfinance industry.

¹¹ One of the best documented examples of an urban oriented MFI that successfully branched out into agricultural and rural lending by using an individual cash flow lending technology was reported by Buchenau and Meyer (2007). The

the IPC organization uses only individual lending in its operation in some 30 countries around the world, many of which operate in difficult conditions. It introduced its technology for agricultural lending to Centenary Rural Development Bank in Uganda several years ago.

Clearly, there are huge challenges in identifying ways to deal with the costs and risks of making small loans to dispersed farmers so that interest rates can be kept as low as possible yet fully cover the costs of the lender. Fortunately, a large number of experiments are underway in Africa and elsewhere that are testing a range of ideas such as mobile banking, various types of new technology, and member-owned financial institutions (Christen and Pearce, 2006; Nagarajan and Meyer, 2005). The results will help identify solutions that will contribute to greater outreach to farmers and rural communities and to sustainable financial institutions.

CONCLUSIONS

Value chain analysis has emerged as a popular tool for analyzing integrated economic activities. In this paper, I have highlighted some key ideas involved in value chain analysis with an emphasis on learning how a chain is financed and what types of credit might be usefully supplied to expand, upgrade and modernize the chain. A more thorough analysis would include savings and other financial services.

With the exception of large firms, most actors in an agricultural chain self-finance their operations. A necessary condition for lending is that the lender must be able to successfully screen and monitor clients and enforce contracts. That is true for both informal and formal finance. Informal lenders within a chain have an information advantage compared to formal lenders outside the chain because they can often minimize their transaction costs by performing these credit functions as part of their normal interaction with clients. However, since side selling may be hard to control, they may choose to not lend even though they may be able to tolerate greater defaults than a formal lender providing they can still operate their main business of trading or processing. Even if contract enforcement is not a serious problem, they may lack sufficient resources to lend on a broad scale. If we can improve their access to formal finance, they may be able to expand their informal loans and introduce more competitiveness into the chain. Other actors in the chain may then benefit indirectly.

Value chain analysis can be important in focusing attention on where financial interventions may have the highest payoff. It can identify where there may be unmet effective demand and where lending costs and risk may be lowest. The next step is then for financial institutions to follow up with the more detailed analysis required to design products, develop lending capacity, and generate diversified loan portfolios. For example, lending to farmers in the value chain requires asking questions such as “what other economic activities does the farmer and the household engage in? What cash

same lending technology used in El Salvador was subsequently introduced into Centenary when it first started its agricultural lending in Uganda in the end of the 1990s.

inflows and outflows do they produce? What are the sources of income to repay the loan if the value chain crop fails? How much can be prudently lent and how should the loan be structured given the household's cash flow?"

The issue of portfolio risk requires addressing the questions of "what share of the total loan portfolio should be lent to agriculture? What share should be lent to this value chain? How can the lender's risk be mitigated to deal with the effects of systemic risks such as drought or disease?"

These questions imply that a combination of value chain and financial systems analysis is needed to solve rural and agricultural financial problems. Value chain analysis provides a commodity by commodity approach to learning about current financial arrangements and potential demands for financial products and services. This is a useful starting point for identifying possible interventions. The results of the analysis logically lead to broader questions about how to create systems and institutions that evaluate the credit worthiness of potential clients, and the types, terms and conditions of financial products required to meet the potential demands.

Figure 1.

Value Chain Concept

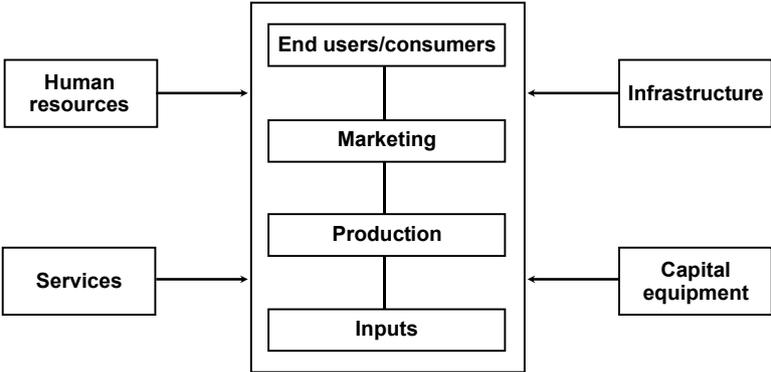
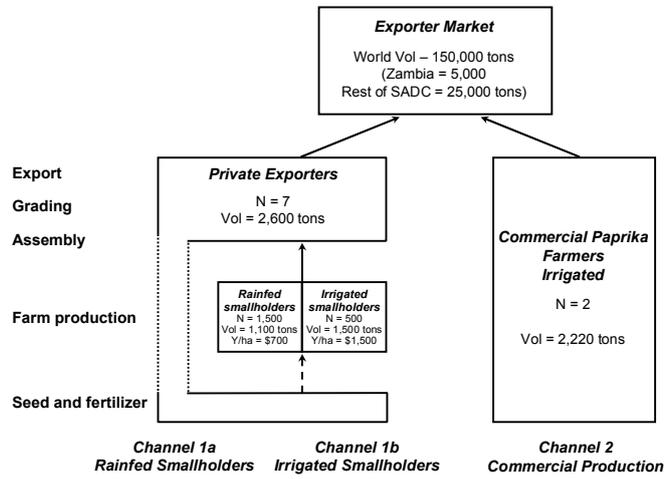


Figure 2.

Paprika Subsector in Zambia



Source: Haggblade

Figure 3.

Zambia Cassava Supply Chain

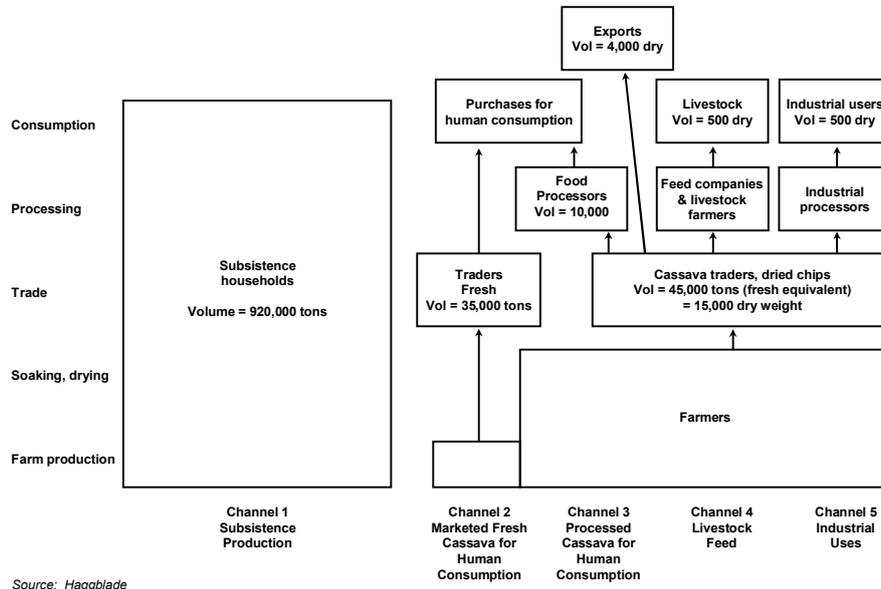
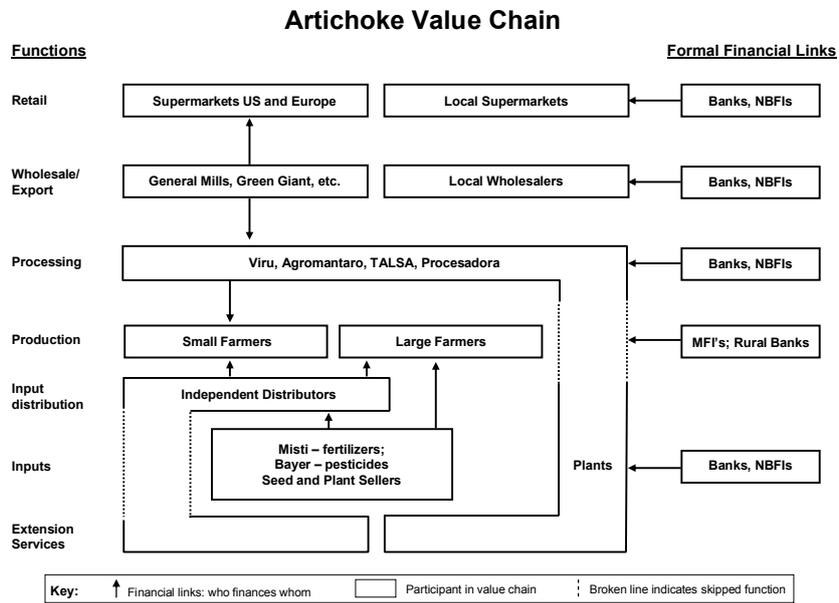


Figure 4.



Source: USAID

**Table 1. Financial Patterns and Potential Demand for Finance,
Artichoke Value Chain**

Value Chain Level	Within Chain Finance	Finance from Financial Institutions	Potential Demand
Retail	Receive supplier credit	Bank loans, outside Peru	None
Wholesale/ Export	Offer supplier credit to retailers Offer contracts to processors	Bank loans, outside Peru	None
Processing	Contracts and advances for wholesalers Offer supplier finance and technical services to producers	Short-term bank loans, 12% interest, 100% collateral	Medium and long-term investment finance for expansion
Production	Supplier finance and technical assistance from processor and input distributor	Short-term NBFIs loans, some facilitated by contracts, 2.5 to 3.5% per month	Medium to long-term credit or leasing to acquire fixed assets
Input Distribution	Offer supplier finance and technical services to producers Receive supplier finance and volume discounts from suppliers	None	Short-term finance
Input Supply	Offer supplier finance to input distributors and large producers	Short-term bank loans, 12% interest, 100% collateral	None
Extension Services	Processors and input distributors offer technical services to producers	None	None

Source: Campion, 2006

Figure 5.

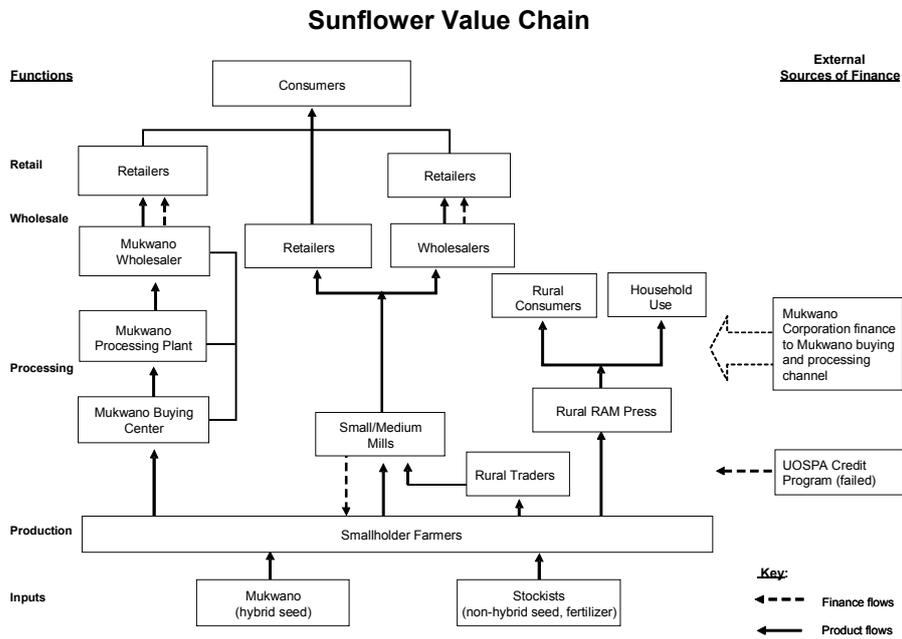
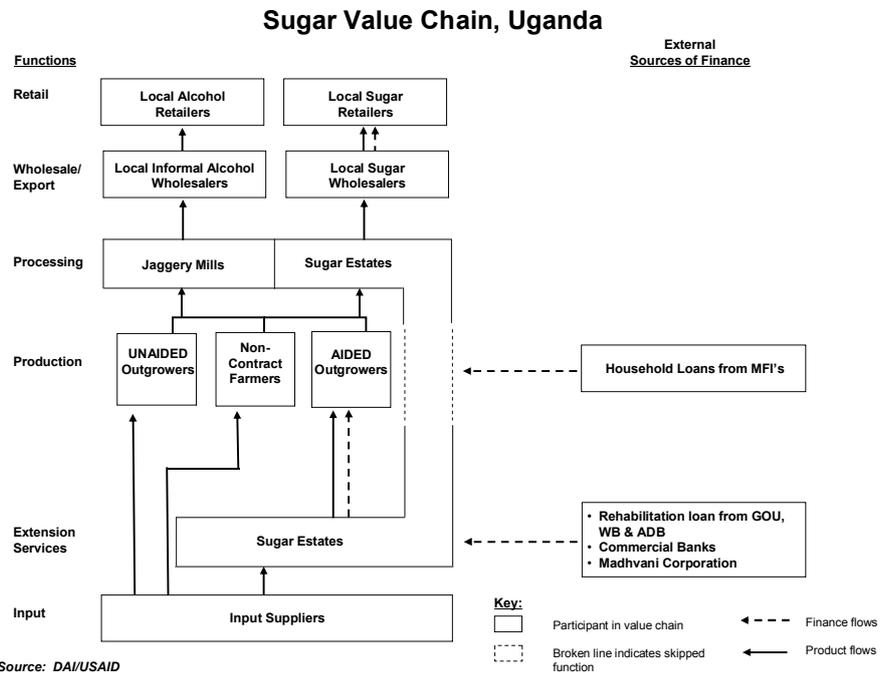


Figure 6.



References

- Buchenau, Juan, and Richard L. Meyer, "Introducing Rural Finance into an Urban Microfinance Institution: The Example of Banco ProCredit El Salvador," Paper presented at the International Conference on Rural Finance Research: Moving Results into Policies and Practice held at FAO, Rome, March 19-21, 2007.
- Campion, Anita, "Financing Artichokes and Citrus: A Study of Value Chain Finance in Peru, MicroREPORT No. 73, USAID, AMAP, Washington DC, December 2006. www.microlinks.org.
- Chitundu, M., K. Droppelmann and S. Haggblade, "A Value Chain Task Force Approach for Managing Private-Public Partnerships: Zambia's Task Force on Acceleration of Cassava Utilization," FSRP Working Paper No. 21, Food Security Research Project, USAID, Lusaka, 2006.
- Christen, Robert and Douglas Pearce, "Managing Risks and Designing Products for Agricultural Microfinance: Features of an Emerging Model," Occasional Paper No. 11, CGAP, Washington DC, August 2005. http://www.cgap.org/portal/binary/com.epicentric.contentmanagement.servlet.ContentDeliveryServlet/Documents/OccasionalPaper_11.pdf.
- Diaz, Lillian C. and Jennifer E. Hansel, "Making Risk Sharing Models Work with Farmers, Agribusinesses and Financial Institutions," Paper presented at the International Conference on Rural Finance Research: Moving Results into Policies and Practice held at FAO, Rome, March 19-21, 2007.
- Fries, Robert and Banu Akin, "Value Chains and Their Significance for Addressing the Rural Finance Challenge, MicroREPORT No. 73, USAID, AMAP, Washington DC, December 2004. www.microlinks.org.
- Gonzalez –Vega, Claudio, Geoffrey Chalmers, Rodolfo Quiros, and Jorge Rodriguez-Meza, Hortifruti in Central America: A Case Study about the Influence of Supermarkets on the Development and Evolution of Creditworthiness and Small and Medium Agricultural Produces," MicroREPORT No. 57, USAID, AMAP, Washington DC, April 2006. www.microlinks.org.
- Haggblade, Steven, "Subsector Supply Chains: Operational Diagnostics for a Complex Rural Economy," in Transforming the Rural Nonfarm Economy: Opportunities and Threats in the Developing World, edited by Steven Haggblade, Peter Hazell and Thomas Reardon, in press, Johns Hopkins University Press, Baltimore, 2007.
- IFAD, "Agricultural Marketing Companies as Sources of Smallholder Credit in Eastern and Southern Africa," Rome, December 2003.
- Kaplinsky, Raphael and Mike Morris, "A Handbook for Value Chain Research," Prepared for IDRC, 2001. <http://asiandrivers.open.ac.uk/Resources.html>.

- Meyer, Richard L., Catherine Johnston, and Alexis Curtis, "Agricultural Value Chain Finance: Sugar, Maize and Sunflower in Uganda," Draft paper submitted to USAID, September, 2006.
- Nagarajan, Geetha and Richard L. Meyer. 2005. "Rural Finance: Recent Advances and Emerging Lessons, Debates, and Opportunities." Reformatted version of Working Paper No. (AEDE-WP-0041-05), Department of Agricultural, Environmental, and Development Economics, The Ohio State University, Columbus, Ohio, USA. <http://www.microfinancegateway.org/content/article/detail/27421>.
- Pearce, Douglas, 2003, "Buyer and Supplier Credit to Farmers: Do Donors have a Role to Play?" Presented at Paving the Way Forward for Rural Finance: An International Conference on Best Practices, Washington, D.C., June 2-4, 2003. www.basis.wisc.edu/live/rfc/cs_15b.pdf.
- Pelrine, Richard John, "From Value Chain to Financial Products," Paper presented at the Women's World Banking Workshop on Rural Finance: Strategies to Offer Sustainable Services, Monterrey, Mexico, February 21-23, 2007.
- Pelrine, Richard John, and Asaph Besigye, "Commodity Value Chains: Mapping Maize, Sunflower and Cotton Chains in Uganda," USAID/Rural Speed, Kampala, December 5, 2005.
- Quiros, Rodolfo, (editor), Financiamiento de las Cadenas Agrícolas de Valor, Summary of the conference "Financiamiento de las Cadenas Agrícolas de Valor," Costa Rica, May 16-18, 2006, FAO and Academia de Centroamerica, San Jose, Costa Rica, 2007.
- Sturgeon, Timothy J. Sturgeon, "How Do We Define Value Chains and Production Networks", IDS Bulletin, Vol. 32, No. 3, 2001.
- USAID, AMAP, "A Fresh Look at Rural and Agricultural Finance," RAFI Notes, Issue 1, January, 2005. www.microlinks.org.
- USAID, AMAP, "Value Chain Finance," RAFI Notes, Issue 2, June, 2005. www.microlinks.org.
- USAID/AMAP, "Warehouse Receipts Systems," 2006. ([www.microlinks.org/Module IV](http://www.microlinks.org/Module%20IV) Rural Agricultural Finance Specialty Topic Series: Warehouse Receipts Systems)
- Villeda, Lillian Diaz, and Jennifer E. Hansel, "The Missing Link for Rural Farmers and Microentrepreneurs: Strategic Alliances for Financial Services and Market Linkages in Rural Areas," Conceptual Note, The SEEP Network, October 2005.
- Wittlinger, Bettina, and Tiodita Mori Tuesta, "Providing Cost-Effective Credit to Small-Scale Single-Crop Farmers: The Case of Financiera El Comercio," Insight No. 19, ACCION, Boston, August 2006.