# *The Impact of Contract Farming on Income Distribution: Theory and Evidence*

Matthew Warning and Wendy Soo Hoo

Paper Prepared for Presentation at the
Western Economics Association International Annual Meetings
June 30, 2000

## 1. Introduction

In the Lake Naivasha area of Kenya, 400 million fresh flowers are produced each year through contractual arrangements between large agro-industrial firms and peasant farmers (Little and Watts 1994). The flowers are graded, packed, and cooled where they are produced and then taken to Nairobi for export to Europe and North America. The time from field to shelf is four days.

This case is a rather dramatic example of the practice of contract farming. Contract farming is the vertical coordination between growers of an agricultural product and buyers or processors of that product. Contracts may provide production inputs, credit, and extension services to the grower in return for market obligations on such considerations as the methods of production, the quantity that must be delivered, and the quality of the product.

While contract farming dates back to the 19th century in the United States and at least to the 1940s in Latin America, in recent years the practice has undergone substantial expansion throughout the developing world. This expansion has brought considerable attention from both supporters and critics of contract farming. From one perspective (e. g. , Dirven, 1996; Schejtman, 1996), contract farming has the potential to substitute for the state in the wake of neoliberal reforms in the agrarian sector: as the state disengages from the provision of

inputs, extension services, credit, and price supports, private firms can enter to fill the same roles, and do so more efficiently. Critics (e. g., Glover and Kusterer, 1990, Little and Watts, 1994) see contract farming, however, as a tool through which multinational agro-industrial firms can exploit unequal power relationships with growers.

Our central concern in this paper is the impact of contract farming on the distribution of income in rural communities. We hope to identify the factors that determine whether contract-farming schemes will tend to reinforce existing patterns of income stratification or lead to a more equal income distribution. We approach this problem from the perspective of New Institutional Economics (NIE) and, thus, focus on the role of transactions costs and imperfect information in determining the structure of agrarian institutions, including contract farming.[1] Several authors have undertaken excellent New Institutional Analyses of contract farming – most notably Key and Runsten (1999) and Grosh (1994) – and our research has benefited a great deal from their work. We focus on the NIE insights for the more narrow set of issues relevant to income distribution.

## 2. Theory

[1] For an excellent overview of the principles of New Institutional Economics as applied to rural economic organization, see Braverman, Hoff and Stiglitz (1993).

The impact of a contract-farming scheme on the distribution of income will depend on who participates in the scheme and the benefits they receive from participation. We can model a contract-farming scheme as a principal-agent game in which a firm (the principal) works with a grower (the agent) to produce a crop. The firm chooses growers with whom it would like to contract and sets the contract terms. The growers, in turn, choose whether to participate. The combination of these choices describes the selection process for the contract-farming scheme. The benefits participants accrue will depend on the terms of the contract and their own characteristics. To the extent that the benefits from a contract-farming scheme accrue more to larger growers than to smaller growers, the scheme will reinforce income stratification. To the extent the opposite is true, the scheme will have an equalizing effect.

There is, of course, substantial overlap in the factors influencing the selection process and the factors influencing the process through which benefits accrue: firms and growers will choose to contract with one another based on the gains they expect to obtain from the contract. Moreover, the transactions costs and information costs in the market environment in which production takes place jointly influence both processes.

In the discussion that follows we consider each of these issues in turn: the selection process, differential benefits and the market environment.

### *2.1 The Selection Process*

#### *2.1.1 The Choice of Participants by the Firm*

A firm would like to contract with growers to produce a crop. It can choose to contract with one larger (and better off) grower or with several smaller (and poorer) growers. The firm's objective in this choice is to produce a given quantity of output while minimizing both direct costs and indirect costs (transactions costs). Direct costs will be determined by the contract terms, a topic that we will return to later. Here, we examine how the firm's choice affects the transactions costs it incurs.

At the level of an individual grower, the firm incurs two types of transactions costs. There are per-grower costs that are of a fixed amount regardless of the size of the grower. These include items such as the costs of screening applicants, negotiation of the contract terms, monitoring grower behavior (i.e., ensuring that specified production practices are followed), and providing information (e.g., extension services). The firm will also incur transactions costs that are proportional to the level of production. In this context, it is difficult to identify transactions costs that are strictly proportional, i.e., costs that do not have a fixed component. However, some costs do have substantial proportional components.

For example, if we separate the costs of transporting production into (1) the costs of procuring the product at the farm and bringing it to a central collection point, and (2) transporting the product to market, the latter costs would be largely proportional.

The dominance of fixed transactions costs in contract farming schemes should lead firms to contract with the larger grower: because most of the transactions costs are incurred on a *per-grower* basis, the firm will minimize transactions costs by contracting with the fewest growers possible.

### *2.1.2 The Participation Decision of the Grower*

We consider three issues that influence the participation decisions of small and large growers: the relative risk premiums, shadow values of credit, and shadow prices of labor for small and large growers.

#### *Risk Premium*

Contract-farming schemes typically involve the cultivation of non-traditional crops. These crops are generally riskier than traditional crops, both because of their higher yield variability due to their not being developed under local conditions, and because of their higher price variability due to poorly developed local markets for the product (Runsten and Key, 1996). A smaller grower will generally have less capacity for self-insurance than a larger grower and will,

thus, be more risk averse. This should result in the larger grower being more willing to participate in the contract-farming scheme.

*Shadow Value of Credit*

Contract-farming schemes are often credit providing. Owing to their relatively poor asset position, poorer farmers generally are more credit constrained than larger growers and so have a higher shadow value of credit. Thus, the smaller grower will find a given credit-providing contract more valuable, and he or she will be more willing to participate.

*Shadow Price of Labor*

A smaller grower is more likely than a larger grower to rely primarily on family labor and less likely to hire in labor. This results in a lower shadow price of labor for the smaller grower for two reasons: (1) household labor typically has lower monitoring costs than hired labor, and (2) certain forms of household labor – typically the labor of children and sometimes the labor of women – are not marketable for legal, social or cultural reasons, and thus have low labor-market opportunity costs (though perhaps high household opportunity costs). The lower shadow price of labor will result in lower internal labor costs for a smaller grower, and he or she will find a given contract - particularly one that mobilizes his or her family labor - more desirable.

### *2.1 Differentiated Contracts*

In the preceding discussion we considered the contract terms as exogenous to the choices of firms and growers. However, the contract terms may, in fact , be endogenous to these processes. For example, a firm might individually negotiate contract terms with each grower, or they might offer a variety of contracts to allow the growers to self-select. Either option is likely to have more transactions costs associated with it (e.g. negotiation and monitoring costs) than offering a single contract to all growers. Why might a firm want to take such an approach? Differentiated contracts might benefit the firm, and possibly the growers, in a number of ways. For example, if the firm has a relatively low cost of credit, it can structure the terms of a credit-providing contract so as to extract a poorer grower's risk premium. This might involve offering a credit-providing contract with a lower price for the final product, in addition to a contract with no credit that pays a higher price for the product. The smaller, more credit-constrained growers will opt for the credit-providing contract and the firm will extract the difference between its shadow price of credit and that of the grower.

Similarly, the firm can extract the relatively high risk premium of the smaller grower. The firm is likely to be risk neutral, either because of its ability to self-insure or because of a widely diversified grower base. Most contracts provide the grower with a fixed price for his or her output and thus effectively insure the grower against price variability. Similarly, the firm can include crop insurance

as part of the contract to insure the grower against yield variability. In both cases, the firm can extract the risk premium of the grower by combining a higher degree of insurance with a lower price for the product. In so doing, it will gain the most from growers with the highest level of risk aversion, i.e., smaller growers.

The relatively vulnerable position of the poorer grower, reflected by a high shadow value of credit and a high degree of risk aversion, makes him or her a more desirable partner for the firm. This, of course, suggests relations of exploitation - the firm takes advantage of the limited alternatives of the poorer grower in order to increase the firm's profits. And it is undoubtedly the case that the firm places more weight on its own profits than it does on the welfare of the growers when it is designing the contracts. However, if we assume that a poorer grower is rationally choosing to participate in a contract-farming scheme because the scheme does, in fact, offer better returns than his or her limited alternatives, the motives of the firm may be of little consequence to the grower. Thus, they may have little relevance in determining the impact of the scheme on the distribution of income and the welfare of poorer growers. Indeed, it may be the case that the firm's attempts to exploit the relatively vulnerable position of the grower with the lowest reservation utility results in an improvement in the distribution of income.

### *2.2 Market Development*

We can, thus, see how the level of market development fundamentally influences the likelihood of a poorer grower's participation in contract-farming schemes. For example, poorer growers are more likely to find it profitable to participate in a scheme when markets are poorly developed. Similarly, poorly developed markets for credit and insurance will increase the likelihood that firms will favor poorer growers in their schemes. We are, therefore, presented with the counter-intuitive, if not ironic, result that poor market development may serve as an advantage to the poor.

## 3. Evidence

Given the prevalence of contract farming worldwide, surprisingly few detailed case studies have been published and little systematic cross-country research has been undertaken. Notable exceptions to this are Porter and Kevin Phillips-Howard's (1997), Little and Watts's (1994), and Glover's (1989) cross-country studies on Africa, and Glover and Kusterer's (1990) study of Latin America and Africa. In addition, Runsten and Key's (1996) study, while limited to Mexico, covers a wide array of contract-farming schemes in diverse circumstances. In the analysis that follows, we draw on these studies, as well as our own fieldwork, to reach general conclusions about contract farming and income distribution.

Rather than simply stating the overall results, we consider five case studies in turn, each of which illustrates patterns seen in the literature. We then summarize these patterns.

### *3.1 Frozen Vegetables in Mexico (Runsten and Key, 1996; Key and Runsten, 1999)*

In 1967, the U.S. firm Birdseye created a frozen vegetable industry in Mexico based on contract farming. In the 1980s, the industry was one of the most dynamic sectors of Mexican agriculture with an annual growth rate of 34 percent. A number of U.S. multinationals – Green Giant, Campbells and Stokely – as well as Mexican firms, are involved in the industry. The varied experience of these firms in contracting with larger and small growers makes this a particularly relevant case study.

*Contracting with Smaller Growers by Necessity*

Initially, the U.S. firms chose to contract exclusively with larger growers. One of the primary reasons they gave for this choice was the additional costs associated with the smaller growers. These costs included the fixed transactions costs described earlier, as well as costs deriving directly from the relative poverty of the smaller growers.

> Not only did their [the smaller growers] numbers increase administrative costs, but they needed more services from the firm. For example: they needed more extension assistance; communication was costly as they often has no phones; they had to borrow or rent more specialized machinery (such as roto-tillers or high-pressure sprayers); they wanted to

> borrow operating capital in addition to receiving crop inputs; they made more numerous deliveries of smaller volume; they tried to get the firms to loan them money for tractors and other machinery; and they required more monitoring for pesticide violations. The director said they did not want to be an investment bank, did not want to be the *patron*. (Runsten and Key, p. 29)

Nevertheless, over time a number of firms found it in their interest to contract with smaller growers as well as large growers. In 1983, when Green Giant built a plant in the town of Irapuato, they contracted with both poorer *ejidatarios* (members of the traditional semi-communal villages or *ejidos*) and larger growers. They did this for two reasons. First, the firm encountered difficulties finding enough growers to produce the amount of vegetables they needed. Second, they feared that the larger growers, being few in number, might collectively bargain to bid up the prices paid to them for their product. This situation changed in 1987, however, when the profitability of grain production declined due to a change in agricultural policy: the pool of available large growers increased and the firm reduced its dealings with the *ejidatarios* to reduce its transactions costs.

Campbells contracted with *ejidatarios* in the Valle de Santiago for the production of small, pickling cucumbers because these growers had better access to the large amounts of labor required for the crop. Apparently this is a reference both to the *ejidatarios*' control of family labor and to their lower transactions costs for screening and monitoring non-household labor as a result of living in the

communities from which the labor was drawn. During the boom years of the 1980s, Campbells extended this program to other crops as well. In all cases, it appears that this choice did not demonstrate a preference for the *ejidatarios*, but rather a lack of alternatives. When the boom years were followed by a bust, Campbells abandoned frozen vegetable production in Mexico altogether.

For similar reasons, Birdseye contracted with *ejidatarios* in Aguascalientes in the 1980s. Cost considerations - both transactions cost and the costs of constructing new plants - led the firm to eventually abandon these growers and contract with larger growers in the northern area of the state.

The examples of Green Giant in Irapuato, Campbells in the Valle de Santiago, and Birdseye in Aguascalientes suggest that firms were willing to contract with smaller growers only when other alternatives were not available: weak local development of the markets for the product and labor the firms needed left the firms with the choice of contracting with *ejidatarios* or contracting with no one. In the boom years of the 1980s this was justified: the high price received for the product was sufficient to cover the additional transactions costs associated with contracting with smaller growers. However, when market conditions were less favorable, this was no longer true and the firms reduced or abandoned their dealings with the *ejidatarios*.

In the next two sections we consider two examples of firms contracting with smaller growers by choice.

*Differentiated Contracts*

In Guanajuato, Campbells tried another strategy to increase production for the plant. It offered seven different contracts that allowed the growers to self-select according to their needs and the firm to pay different prices to different categories of growers. Ostensibly this was to cover the higher transactions costs associated with smaller growers. In the case of broccoli, the contracts ranged from one providing "complete services (including all operating capital, use of specialized machinery, seedlings, inputs, regular technical assistance, and some risk-sharing in the event of crop loss) that had a base price of 6.5 cents per pound of broccoli" to purchases on the spot market at the plant door for 13.5 cents a pound. (Runsten and Key, p. 32)[2]

In contrast with Campbells, the other firms in the region only offered two contracts – one with some services and one without. With the narrow range of contracts, the firms were unable to recover the additional transactions costs associated with the smaller growers because they were paying them *too high* of a price for their product. Rather than adopt Campbells's approach of more

[2] The authors did not discuss how Campbells prevented the "complete services" growers from selling to them on the spot market and obtaining the higher price.

differentiated contracts, these firms put pressure on Campbells to bring its prices in line with theirs. In the end, Campbells was unable to pay no-service growers a high enough price or full-service growers a low enough price to offer the respective groups an adequate return and at the same time recover the differential costs of dealing with each group.

*Successful Contracting with Smallholders.*

Frigozados La Huerta is a family-owned frozen vegetable firm located just north of the city of Aguascalientes. While La Huerta relies on its own vertically integrated production for much of the vegetables it processes, it also successfully contracts with 10 large producers and 70 *ejidatarios*, providing the latter with services including credit, seedlings, chemicals, fertilizer and extension. How is it that La Huerta succeeds in contracting with small growers whereas the other firms in the industry have failed? The answer appears to lie in a number of actions La Huerta has taken to reduce its direct and indirect costs and in local circumstances that make the *ejidatarios* particularly well suited to the task.

First, many of the smaller growers or their children work for the firm in other capacities. This presumably reduces the asymmetric information between the firm and potential growers and thereby significantly reduces screening costs to the firm. In addition, the employment of family members by the firm results in implicitly interlinked labor-product transactions lowering contract enforcement

costs: if a grower reneges on his or her contractual obligations, the firm might sanction the employee family member.

Second, the firm has reduced the costs of services requiring sites visits by limiting the number and location of *ejidatarios* and choosing only those whose farms lie along the main highway. This makes it possible for the firm's agronomist to visit all the farms once a week. In addition, the growers themselves are required to pick up the seedlings and fertilizer from the firm and so must absorb the associated fixed costs of these visits.

The *ejidatarios* find the La Huerta contracts appealing for a number of reasons. First, the *ejidatarios* have lower labor costs than other growers. The region is very heavily impacted by outmigration of young men to the United States. This results in a critical shortage of the individuals who generally make up the bulk of the labor pool. Not only are the *ejidatarios* able to access household labor for which markets are missing, but they also have lower transactions costs (e.g., screening, monitoring, and enforcement costs) for non-household *ejido* labor because of their socially proximity to potential laborers.

Second, the *ejidatarios* had lower rental costs for land. It was nominally illegal to rent land in the area, and while *ejidatarios* would rent (via a sharecropping

arrangement) to other *ejidatarios*, they viewed it too risky to rent to anyone from outside the *ejido*. As a consequence, the firm and the other growers had to compete for the limited amount of non-*ejido* land in the area.

Finally, according to the La Huerta's own estimates, the smaller growers obtained significantly higher crop yields than the firm. La Huerta attributed this to the smaller size of the *ejidatarios*' plots and the resultant ability to catch disease and pest problems sooner, as well as the labor monitoring issues mentioned above.

### *3.2 Processing Tomatoes in Mexico (Runsten and Key, 1996)*

The processing tomato industry developed in the 1960s in the Sinaloa and Sonora regions of Mexico in response to excess supply in the fresh tomato market. Large, U.S. multinational agro-processors - including Green Giant, Del Monte, Heinz, and Campbells Soup – as well as Mexican firms contract with growers in the region to obtain the product they require for their plants.

While, like in the case of frozen vegetables, tomato-processing firms originally contracted with lower-transactions-costs large growers, many later switched to contracting with the poorer *ejidal* growers. The reasons for the change illustrate how transactions costs can work both against and in favor of smaller growers participating in contract-farming schemes.

As a lucrative market for fresh tomatoes developed, firms found it increasingly difficult to enforce contracts they had with larger growers: when prices were high, growers would renege on their contractual agreements and divert their product to the fresh market, leaving the firms with substantial unused processing capacity. The relatively weak and cumbersome legal system in the area left the firms with little recourse other than to deny growers future contracts.

At some point, the transactions costs of enforcement apparently became high enough to outweigh the various fixed transactions costs associated with smaller growers, and firms began to contract with the latter group. In this case, it was the high transactions costs faced by *ejidal* producers themselves that made them more attractive to the firms. First, the *ejidal* growers found it more costly to access the fresh tomato market and so were less likely to divert their product to these markets. Second, *ejidal* growers obtained credit through the scheme and had few alternative sources of credit; the denial of future contracts would represent a very real penalty to them. Thus, the firm was able to take advantage of the *ejidal* growers' high shadow value of credit to reduce contract enforcement costs. In this way, contracting with the poorer growers became advantageous for the firms.

### *3.3 Confectionery Peanuts in Senegal (Warning and Key, 2000)*

Peanuts have been a mainstay of Senegal's economy since the 19th century. The majority of the peanut production is processed into oil and exported to European markets. Since the 1960s Senegal has also produce more lucrative "confectionery" peanuts that are eaten whole rather than processed into oil. Confectionery peanut production is now run as contract-farming scheme by NOVASEN, a private company with primarily French and Senegalese shareholders. NOVASEN works with 32,000 growers and produces approximately 40,000 tons of peanuts annually. It provides growers with credit, seeds, fertilizer, agro-chemicals and extension services. The growers' returns from the scheme are quite high and, in a normal year (normal in terms of rainfall and pest problems), 98 to 100 percent of growers are fully compliant with the contract and repay their entire loan.

In contrast to the previous case studies, the investigation of the NOVASEN scheme relies heavily on econometric analysis of data on farmer characteristics (wealth, reputation, non-agricultural income, etc.) and agricultural production of participants *and non-participants* in the NOVASEN scheme. Of particular interest is the econometric identification of the determinants of participation in the scheme.[3] The estimation results indicate that wealth (and, apparently, farm size)

[3] As discussed earlier participation depends on the choices of both the firm and the grower. Thus, this estimation represents the selection process described in sections 2.1.1 and 2.1.2.

size did not determine participation, but reputation did. This suggests that smaller farmers were as likely as larger farmers to become growers in the scheme.

Two characteristics of the scheme appear to be responsible for the equal access of poorer and larger farmers. First, unlike many of the crops grown in contract-farming schemes, peanuts are very familiar to nearly all farmers in the area; confectionery peanuts differ only in variety and in the requirement of more rigorous attention to production techniques and product quality. Thus, unlike many non-traditional crops, cultivation of confectionery peanuts does not represent a substantially riskier venture than cultivation of traditional crops.

Second, and perhaps more importantly, NOVASEN uses local intermediaries to screening potential growers, monitor production techniques, and enforce repayment. The intermediaries are members of the villages they serve and are typically growers themselves. The use of intermediaries appears to be central to firm's success in mitigating the transactions costs associated with working with smaller growers. As Udry (1990) points out, information flows freely in rural communities and long association provides community members with intimate knowledge of their peers. Screening is therefore essentially costless for a village intermediary. In addition, the intermediary is able to mobilize social sanction to penalize growers who attempt to renege on their contract - particularly since the

village may be cut off from the scheme if default becomes significant – and consequently the costs of monitoring and enforcing contracts is dramatically reduced.

### *3.4 Sugar and Tea in Malawi (Nankumba and Kalua, 1989)*

In contrast to the schemes discussed above, the state rather than private firms runs the Smallholder Sugar Authority (SSA) and the Smallholder Tea Authority (STA) contract-farming schemes in Malawi. At the time of the study, approximately 4,500 growers participated in the SSA while 187 participated in the STA. The schemes supply the growers with credit, crop inputs, and extension services. Growers must reimburse the scheme not only for the inputs, but also for the extension services and growers consider the latter charges to be quite substantial.

Both schemes appear to have a significant bias against smaller growers, and for similar reasons. Surprisingly, though, this bias arises not from choices made by the scheme authorities, but from characteristics of the crops that make them particularly unsuited to smaller growers. The crops are characterized by complex production and processing technologies and substantial specialized inputs that are unfamiliar to most growers and require large capital outlays. These characteristics dramatically increase the level of risk confronted by growers. Smaller growers, having less risk-bearing capacity, are more likely to

suffer a catastrophic loss in the event of a crop failure. In addition, both crops involve some operations for which there are scale economies. The smaller grower must spread his or her fixed costs across a smaller amount of production and consequently finds the crops less profitable. This applies as well to extension services, as the higher costs of site visits – in terms of the amount spent per unit of output – are borne by the producer rather than the firm.

## 4. **Conclusions**

While is difficult to draw many general conclusions from such diverse examples, one theme clearly stands out in the case studies: contracting with smaller growers involves high transactions costs and, under most circumstances, agro-industrial firms prefer to contract with larger growers. The influence of these costs appears to dominate the other considerations – e.g., differences in shadow values of credit and risk premiums - that might make smaller growers more attractive. Thus, contract-farming schemes tend to reinforce existing patterns of income stratification.

A perhaps perverse result also emerges from the case studies: smaller growers appear to benefit from weak institutional development. In the case of the processing tomato industry, poor development of legal institutions allowed large growers to renege on their contractual obligations. Uneven development of the

fresh tomato market and a lack of available alternatives in the credit market made smaller growers more dependable contractual partners. In the frozen vegetable industry, weak labor market institutions – restrictions on female participation and the lack of mechanisms (such as formal references and work histories) to reduce the costs of screening and monitoring workers – led firms to contract with smaller growers, essentially to serve as labor-market intermediaries. If we believe that institutional development will proceed with the passage of time, these findings do not bode well for the prospects of small growers benefiting from contract-farming schemes.

In other ways, however, institutional development may make smaller growers more desirable partners for firms. Many of the transactions costs that keep firms from contracting with smaller growers result from weak institutions. For example, if markets for information were better developed, growers might directly access important production information rather than relying on the firm for the high fixed costs of extension services.

Some of the barriers to the participation of smaller growers in contract-farming schemes may be reduced through changes in the institutional structure of contract farming itself. The NOVASEN example in Senegal illustrates how the use of village intermediaries can mobilize local information and social intuitions to effectively reduce transactions costs. And the La Huerta example shows how

linking transactions and limiting the geographical spread of small growers can make them desirable partners. Similarly, firms might contract with grower groups or cooperatives to reduce the amount of fixed, per-grower transactions costs. Finally, rather than focusing exclusively on *reducing* transactions costs, firms might develop mechanisms to *recover* these costs through the use of differentiated contracts.

## *References*

Dirven, M. 1996. "Agroindustry and small-scale agriculture: a comparative synthesis of different experiences." Report LC/R.1663. Economic Commission for Latin America and the Caribbean, Chile.

Glover, D. and Kusterer, K. 1990. *Small Farmers, Big Business: Contract Farming and Rural Development.* St. Martin's Press, New York.

Glover, David J. 1989. "Special Issue on Contract Farming and Smallholder Outgrower Schemes in Eastern and Southern Africa." *Eastern Africa Economic Review*.

Grosh, Barbara. 1994. "Contract Farming in Africa: An Application of the New Institutional Economics." *Journal of African Economies*, 3(2): 231-61.

Hoff, Karla, Avishay Braverman, and Joseph E. Stiglitz, eds. 1993. *The Economics of Rural Organization : Theory, Practice, and Policy*. New York, N.Y. : Published for the World Bank [by] Oxford University Press.

Key, Nigel and David Runsten. 1999. "Contract farming, smallholders, and rural Development in Latin America: The Organization of Agroprocessing Firms and the Scale of Outgrower Production," *World Development* 27 (2) (1999) pp. 381-401.

Little, P. and Watts, M., eds. 1994. *Living Under Contract: Contract Farming and Agrarian Transformation in Sub-Saharan Africa.* Madison: University of Wisconsin Press.

Porter, Gina and Kevin Phillips-Howard. 1997. "Comparing Contracts: An Evaluation of Contract Farming Schemes in Africa." *World Development*, 25(2): 227-238.

Runsten, D. and N. Key. 1996. "Contract Farming in Developing Countries: Theoretical Aspects and Analysis of Some Mexican Case Studies." Report LC/L. 989. Economic Commission for Latin America and the Caribbean.

Schejtman, A. 1996. "Agroindustry and small-scale agriculture: conceptual guidelines for a policy to encourage linkage between them." Report LC/R.1660, Economic Commission for Latin America and the Caribbean, Santiago, Chile.

Udry, Christopher. 1990. "Credit Markets in Northern Nigeria: Credit as Insurance in a Rural Economy." *World Bank Economic Review* v4, n3 (September 1990): 251-69

Warning, Matthew and Nigel Key. 2000. "The Social Performance and Distributional Impact of Contract Farming: The Arachide de Bouche Program in Senegal." University of Puget Sound: Department of Economics Working Paper 00-3.