

THE RATIONALE FOR SHARECROPPING IN MEXICO : A COMPARATIVE STUDY

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1. Introduction

Interest in agrarian institutions has been rising over these past decades, as an academic field of research as well as a public policy concern in developing countries (e.g., land legislation reforms, land titling programs) and international institutions². Following this trend, sharecropping has emerged as a major focus of interest³. The objective of the paper is to provide empirical insights on sharecropping in the Mexican context, through a comparative approach, and with a focus on the rationale of share contracts⁴. It highlights the local diversity in contractual practices, and offers the opportunity to emphasize the role of tenancy configuration in the rationale for share contracts.

The empirical findings presented in this paper come from a set of studies made between 1990 and 1998 (Table 1). Without pretending to exhaust (or be representative of) the extraordinary diversity of the Mexican *campo*, the research aimed at offering insights on the form and role of tenancy in different agro-ecological and socio-economical contexts. In San Lucas Quiavini, the issue was to analyze contractual practices in a marginal environment, among *minifundistas* and for milpa production. In the Sierra Madre Oriental, we focused on potato production in order to understand the huge diversity of contractual arrangements between small potato growers, for a crop characterized by high production costs⁵, and variable yields and prices. In La Soledad, we had the opportunity to observe the arrival of new actors, “outsider-tenants⁶”, who introduced a new crop, potato⁷, through fixed-rent and share contracts. The

relationships between technical change and contractual practices appeared clearly. In Graciano Sánchez, in a context of an irrigation scheme, the significant relationship was between organizational dynamics (failure and individualization of collective ejidos) and tenancy dynamics, within ejidos (with small groups of ejidatarios who succeeded in buying tractors and rent-in land from the other *ejidatarios*) but also between *ejidatarios* and *rancheros* (renting-in, especially for vegetable cropping)¹.

The data was collected through long stays in the villages, combining formal questionnaires and informal day-to-day interaction with villagers. This type of ‘immersion’, intensive-micro research methodology was seen as essential in order to collect reliable data, even if it was at the cost of weaker coverage of quantitative variables.

Before analyzing the role of sharecropping in the different sites, it is necessary to briefly comment about the impact of pre-1992 legal restrictions regarding tenancy on land distributed during the agrarian reform, even if dealing with the crucial question of the relationships between the legal framework and local land practices is beyond the scope of this paper (see Bouquet and Colin, 1996). A common feature of the different sites is that the prohibition of tenancy contracts had no impact on tenancy practices². In all sites, tenancy was well developed before legalization. When available³, quantitative diachronic data covering before and after 1992 reform shows no rupture in the relative importance of tenancy. One might think that the effect of the legal reform was just delayed and that the research was conducted too early to be conclusive on this issue. However, the interviewed actors did not integrate this element when deciding whether to lease or not to lease, or to lease under a given arrangement. When they owned land of different status (communal and *ejido* in San Lucas Quiavini, *ejido* and private property in La Soledad, communal, *ejido* and/or private property in the Sierra Madre oriental), this status did not enter into consideration regarding tenancy decisions. This gap between the land law and tenancy practices can be explained by a diversity of factors: (i) a local consensus (in all sites) recognized the complementary interests of both the landholder and the tenant in tenancy practices, which introduced flexibility in factors management, when the prohibition of *ejido* land sales—much more respected than the prohibition of tenancy—tended to freeze it; as such, there were no denunciations to the agrarian authorities; (ii) tenancy practices were regarded as belonging to the sphere of private decision making; (iii) tenancy practices, usually organized within a local

quality control—and, in return, higher income expectations (Table 2).

1. Due to volume constraint, I will not develop the analysis of each of these cases. See Colin (2003).
2. For analyses showing contradictory results, see de Janvry *et al.* (1997), Olinto *et al.* (2000) and the World Bank Land Policy paper (2001).
3. The best illustration comes from Graciano Sánchez, where we obtained detailed information on land lease from the emergence of the lease market, in the beginning of the eighties, to 1995.

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2. Binswanger and Rosenzweig (1984a), Bardhan (1989), Hayami and Otsuka (1993), Hoff *et al.* (1993), Lastarria-Cornhill and Melmed-Sanjak (1999), de Janvry *et al.* (2001), Deininger and Feder (2001).
3. For recent reviews, see Otsuka *et al.* (1992), Dasgupta *et al.* (1999).
4. Among previous studies that focus or propose argumentative developments on sharecropping in contemporary Mexico, see Cochet (1993), Finkler (1978), McFarland Correa (1991), Turkenik (1975); one finds abundant literature mentioning sharecropping in the hacienda setting, from the 18th to the beginning of the 20th century (see Colin, 2000).
5. Even in these ‘traditional’ conditions, the production requires an intensive use of inputs: seeds (2 tons/ha), labor, especially for planting and harvesting, and a systematic use of fertilizers and agrochemicals (Table 2).
6. These tenants formed a heterogeneous group, from very large potato growers owning hundreds of hectares in other regions (*rancheros*), to small potato brokers and to engineers employed in the agro-industry (*small entrepreneurs*).
7. Unlike in the Sierra case, potato was not a ‘traditional’ production, and the type of potato production introduced in the village (*Alpha* and *Yema* varieties) required a better control and a more intensive production system, with better

'contractual arena', were not especially conflictive¹. In this context, in these sites the 1992 legal change just led to the legalization of contractual practices that were already flourishing locally.

1. Tenancy configurations

By tenancy configuration, I mean a descriptive concept that makes explicit (in a static or dynamic perspective) the combination between: (i) the socio-economic position of the actors, i.e., the actors' resource endowments (land, labor, equipment, financing capacity, technical and management know-how...), and the heterogeneity in these endowments in the 'contractual arena'; (ii) the local diversity in the cropping pattern and the techno-economic characteristics of the each crop; (iii) the characteristics of the market environment for inputs and outputs; (iv) the characterization of the relationships between the actors, sketched as a labor relationship; a land rent relationship; an ambivalent relationship (i.e., seen as a labor relation by the landlord, and as a land rent relation by the tenant), or a partnership. The argument here is simply that the relative importance of fixed lease versus share lease, and the functions and terms of share contracts, might differ greatly in accordance with the tenancy configuration.

The usual approach of tenancy contracts is through bi-dimensional land/labor models, conceptualizing relationships between large and labor-constrained landlords leasing out land to landless tenants, under a manual and/or draft animal labor-based farming system. In the Mexican context, this setting corresponds quite well to the contractual configuration during the hacienda era (Colin, 2000). However, since then several factors have converged in making the land tenancy issue a bit more complex. First and paramount is of course the agrarian reform, which produced a large redistribution of land endowment, and blew more heterogeneity into the group of economic agents bearing rights on land, even if it conveyed the legal prohibition of tenancy on *ejido* plots. Second, one has to consider the changes in the farming systems, at least in some areas, with the development of irrigation schemes, and the introduction of new inputs such as motorization, hybrid seeds, fertilizers, agrochemicals, through the adoption of a Green revolution-type package. These changes increased the heterogeneity in farming systems, with consequences regarding land practices along several lines, two of them being emphasized here. (i) The techno-economic characteristics of crops may tend to restrict the production of some crops (under direct cultivation or leasing in) to well endowed farmers (creating therefore a type of 'selection device'), in terms of technical and marketing know-how, organizational ability, equipment, financial capacity through self financing or access to credit.

1. McFarland Correa (1991) describes a conflictive situation between sharecroppers and landlords in the Municipio of San Miguel de Allende (Guanajuato), but these were small *private* landowners. Conflicts arose usually when sharecroppers who had worked the land for several years refused to return it to the owners wanting to directly cultivate it, in a context of *ejido* land claims by the sharecroppers—i.e., in a context of uncertainty regarding land

Other cropping systems remain grounded in the land and labor factors and are therefore easier to carry on through direct cultivation, even for poorly endowed farmers. Public policies may soften the weight of the 'exclusion pressure' through public irrigation programs, extension programs, credit and price policies, etc., the withdrawal of this public support having possibly (but not necessarily) the reverse effect. (ii) When agricultural production ceases to be based only on land and labor, agrarian contracts may cease to be organized around the bi-dimensional land/labor relationship: the techno-economic change in the farming systems produces heterogeneity in the potential rationales for contracting. As a consequence of the interplay of these different factors, one might have to shift from simple land/labor tenancy models to multi-dimensional models of agrarian contracts, if the purpose is to deal with a broad range of contractual configurations.

In none of the case studies did we find the 'classic' contractual configuration as most often depicted in the literature - large landowners leasing out to landless tenants. First, except a few cases, producers who lease in own land - indeed, leasing in as well as leasing out is most often congruent with owner cultivation (except in Graciano Sánchez, where numerous *ejidatarios* lease out all their land). Second, there are sometimes no difference at all in land endowments between those leasing in and those leasing out (as in Graciano Sánchez regarding leases between *ejidatarios*), or the differences are limited (San Lucas Quiavini, Sierra Madre orientale) (Table 3). Third, when there is a difference, it favors those leasing in, not those leasing out. Regarding manual labor, we recorded the presence, in every site, of some widows or elderly people who do not benefit from family labor, and therefore lease out due to a shortage of labor¹ - but these are not large landlords, all the contrary. Another type of 'structural lessors' found in every site, but numerous only in Graciano Sánchez, corresponds to landlords engaged dominantly in off-farm activities.

The key factors helping to differentiate the 'tenancy arenas' in the contexts studied, in terms of actors' endowments, lie therefore elsewhere.

- First, in the availability of mechanized equipment: those who lease in own tractors (even combine harvesters) in La Soledad and Graciano Sánchez, or yokes, in San Lucas Quiavini; those who lease out most often don't. There are three types of exceptions however: (i) in San Lucas Quiavini, when the landlord possesses a yoke but the land/yoke ratio remains too large, i.e., owning around ten hectares (due to land endowment in the community, such a situation is exceptional); (ii) in La

rights.

1. Such landlords are often mentioned in the literature. See Adelski (1987), Centro de Investigaciones Agrarias (1970), DeWalt *et al.* (1994), Diskin (1967), Finkler (1978), García-Barrios & García-Barrios (1992), Gledhill (1991), McFarland (1991), Morett (1992), Mummert (1987), Pérez Avilés (1995), Stolmaker (1973).

Soledad, when 'outsider-tenants' engage in *a medias* arrangements with (usually wealthy) *ejidatarios* who are then in charge of all labor and mechanized tasks - i.e., in that case, getting access to labor and equipment is a matter for the non-resident tenant, whereas the landlord is certainly not looking for an access to labor by leasing out under such arrangement; (iii) in the Sierra case, where the availability of equipment does not discriminate between actors leasing in and leasing out, here again because getting access to mechanized equipment is not the main stake in the contractual relationships (Table 2).

- Second, in financing capacity. Landowners¹ leasing out are under financing rather than labor constraints - financing constraints that do not permit them to pay for mechanized services when they do not own the equipment, in the farming systems in which mechanized equipment play a crucial role (Graciano Sánchez, La Soledad except for potato, San Lucas Quiavini), or to buy inputs (potato production in the Sierra Madre)² - the exception are wealthy *ejidatarios* from La Soledad who lease out to get access to potato seeds, to tenant's technical expertise and to an insertion in marketing networks. It is therefore not a surprise if the tenants are often in better financial position than the landlords - it is a condition for matching the landlords' needs. But this does not mean that tenants are not themselves under financing constraints, as it will appear in the analysis of contractual choices.
- Third, in technical, marketing, and organizational skills. The incidence on tenancy practices of asymmetric distribution of these skill endowments pops logically out in the case where such skills play a determining role: in Graciano Sánchez among *ejidatarios* (cereal and oleaginous production, intensive cattle breeding), and between *ejidatarios* and *rancheros* (onion); in La Soledad among *ejidatarios* (barley production), and between *ejidatarios* and *rancheros* (potato).

What appears then is the heterogeneity among landlords and much more among tenants, and the quite different types of 'couples' of actors in the tenancy arena, not independently of the type of farming systems.

This creates some specific tenancy configurations (Table 4):

- In the '*rentier/entrepreneur*' configuration, technical and marketing skills, and capital (equipment and variable costs) play a central role in the production process; the 'selection pressure' regarding direct cultivation is therefore high. Because of a differentiated distribution in other-than-land production factors, and of credit market imperfection, well-endowed actors lease in from

1. I use the term of "landowner" for a reason of commodity, even if the *ejidatario*'s right on land does not correspond to the usual private property right.

2. This factor is also mentioned, along with the lack of equipment, by Alanis *et al.* (1953), Barbosa & Maturana (1972), Bartra (1974), Centro de Investigaciones Agrarias (1970), Finkler (1978), Gledhill (1991), Granskog (1974), Léonard (1995), Morett (1992), Pérez Avilés (1995), Stolmaker (1973), Turkenik (1975).

constrained landlords, in a type of reverse tenancy situation¹.

- In the '*business partnership*' configurations, both the tenant and the landlord are producers under constraints who pool complementary resources in order to offset market imperfections. These configurations are rooted in complementary factor endowments, and in production processes in which factors other than (undifferentiated) land and (unskilled) labor play a central role. In the *co-management business partnership configuration*, production is organized in a close interaction between the two partners working in a day-to-day interaction. Socio-economic differentiation between the actors is not expected to be large, precisely because of their similar involvement in the production process. In the *delegation business partnership configuration*, some tasks are delegated from one actor to the other, without the day-to-day interaction. A greater social distance between the partners may be expected, in parallel or not with a greater socio-economic differentiation. This configuration can therefore be found in reverse tenancy situations, as well as under 'undifferentiated' actors' socio-economic status.
- The *subsistence configuration* is characterized by a low profitability of agricultural production and a self-provisioning strategy, which translate into production for on-farm consumption and no structural market-oriented surplus production. There is therefore no incentive for increasing the acreage cultivated beyond self-sufficiency, especially through land leasing in. As the production process is based on manual and/or animal power, the tenancy relation is grounded in the land/labor adjustment. However, in this type of setting, there is no large difference in land endowments, and no significant class of landless people.

Distinguishing tenancy configurations provide some initial clues to discuss contractual choice:

- in the 'standard' configuration, the usual explanation is that sharecropping emerges as the product of a tradeoff between tenant's risk aversion, and incentives (Stiglitz, 1974);
- in the '*rentier/entrepreneur*' configuration, tenants should favor fixed lease in order to capture all the return on their expertise and capital (Rao, 1971; Reid, 1977);
- in the *co-management business partnership configuration*, production is organized in a close interaction between the two partners working in a day-to-day interaction; monitoring and enforcement issues should neither intervene as determinants nor consequences of the arrangement. Share contracts emerge as 'natural' institutional arrangements, the sharing of the product being a consequence of the pooling of the resources (Jaynes, 1982);
- in the *delegation business partnership configuration*, some tasks are delegated from one actor to

1. 'Reverse tenancy' usually designs a situation where large landowners lease in from small landlords. Here, such a situation is not excluded, but the focus is rather on differentiation regarding other factors than land (tenant may have

the other without the day-to-day interaction, with a potential for agency problems (Eswaran and Kotwal, 1985). The share contract then emerges as the 'natural' consequence of resource pooling, but also may bear an incentive function;

- in the subsistence configuration, because of a context of agricultural production uncertainty, and no or incomplete monetization of agricultural production, sharecropping should largely dominate over cash or in-kind fixed leases.

3. Sharecropping as a polymorphic institutional arrangement

Disaggregated data shows the variable importance of tenancy in the same location, for different crops (Table 5). With the exception of San Lucas Quiavini, different contractual arrangements are used in a same site.

In San Lucas Quiavini, the contractual arrangement for *milpa* production is the *a medias* (one half) contract. It defines an exchange of land and seeds on the one hand, and labor preceding the harvest on the other hand: the landlord supplies the land and the seeds¹, whereas the sharecropper has the charge of all manual labor and animal-traction cultural operations, up to the harvest. Each one harvests and transports his share of the production (corn, beans, squash, and also *zacate*). Tractor and fertilizer costs - when used - are shared in half, as the production.

In Graciano Sánchez one finds four lease contracts for agricultural land and one animal breeding arrangement:

- the fixed lease, used for vegetable cropping as well as for cereal and oil-seed production;
- the 'Procampo deal': following the introduction of the Procampo program in Graciano Sánchez, in 1993-94, a new arrangement was developing for cereal and oil-seed production (i.e., crops which gave access to the subsidy), where the tenant had access to the land but left the subsidy to the landholder;
- the 'Percentage of the harvest' (*al porcentaje de la cosecha*) contract too concerns exclusively the production of cereals and oil-seeds: the landholder receives 25% of the production gross value (even if the contract is also labeled "al tercio" locally), after the deduction of harvesting and transportation costs. As for a fixed rent, the landholder has no say regarding the production process (as a matter of fact, he has much less technical skills than the tenant); however, he is

no land at all).

1. If the landlord does not provide the seeds, the sharecropper is entitled all the *zacate* (corn stalk and leaves, used as forage).

present during the harvest and marketing of the product;

- the contract labeled 'Percentage of the net result' (*al porcentaje de la utilidad*) corresponds to the sharing of the value of the production, after deducting not only harvesting and transportation costs, but all the production costs; the landholder receives a 25 to 30% share. Most often, the tenant finances all the production costs and takes care of the entire production process;
- in the *a medias* contract for cattle breeding, the *ejidatario* owner of an irrigated pasture takes care of adult cows during a minimum of one year, and receives in exchange one calve over two born during that time. The owner of the animals can be a *ranchero*, another *ejidatario* or a small trader. The owner of the pasture usually takes full care of the animals and bears all the costs.

In the Sierra Madre oriental, tenancy contracts for potato production include fixed rents as well as different types of sharecropping arrangements:

- *al cuarto* (one fourth) or *al tercio* (one third) contracts—the sharing rate depending on the villages—assign all the costs (with the exception, sometimes, of a plugging) and the production management to the tenant, up to the harvest. Each actor harvests his share or finances harvest costs in proportion of his share, the landholder getting one fourth or one third of the production;
- the *a medias* contract, which is prevalent, associates the landholder and the *mediero* in the production process, both taking on part of the production costs, and the production is shared in half. Contractual terms are variable, but some dominant features appear: labor and agrochemical costs are most often shared, fertilizers are usually shared or provided by the tenant, and the land/seeds exchange is the basic component of the contract.

In La Soledad, one finds for 'traditional crops' tenancy contracts established within the community, or with members of neighboring *ejidos*, under fixed or share arrangements. Among share contracts for barley, pea and mostly corn,

- *al tercio*: the tenant is in charge of all the production process; the landowner receives one third of the production, up to the harvest. Each actor harvests his share or finances harvest costs in proportion of his share;
- *a medias*: the landowner provides the land and the plugging; the *mediero* provides the seeds, the fertilizer, the agro-chemicals and the labor, from sowing up to harvest (excluded). The production is shared in half, before the harvest.

The outsider-tenants developed in La Soledad, in the nineties, potato production under three types of contracts: the fixed lease, and:

- *al tercio* arrangements—which remain exceptional—in which the landholder provides the land and all the labor (tractor, animal and manual labor) up to the harvest, the tenant providing the seeds, the fertilizers, and the agrochemicals; harvesting costs are shared in the same proportion as the production (one third for the landholder);
- *a medias* contracts, much more usual: in most cases, the landholder provides the land prepared for the planting and the labor up to the harvest, and the tenant provides the seeds; fertilizers and agrochemical costs are shared in half, as are the harvesting cost.

Behind generic denominations (*a medias*, *al tercio*), sharecropping arrangements show therefore a high polymorphism (sometimes in the same place for the same crop) not only in the way the product is shared, but also in the way the tenant and the landholder contribute to the production. Two broad types of share contracts can be distinguished.

In some of these contracts, the tenant handles all the production process, bears all the costs, the only landlord's contribution being his participation to the harvest and transportation costs, in the same proportion as his share of the product: *al tercio* (one third) contract in Graciano Sánchez, in La Soledad (except for potato), in the Sierra Madre oriental (potato), *al cuarto* (one fourth) in the Sierra Madre (potato). More exceptionally, the sharing can intervene after the deduction of all production costs, such as with the 'Percentage of the net result' contract in Graciano Sánchez.

In other sharecropping arrangements, the landlord contributes in some way to the production process, before the harvest; the arrangement tends then more towards a partnership. These are mostly *a medias* (one half) contracts: in San Lucas Quiavini (*milpa* production), in La Soledad (corn, pea, potato), in the Sierra Madre (potato); the *al tercio* contract for potato production in La Soledad corresponds also to this type of sharecropping arrangement, with the landlord participating in the production. Whereas in the *a medias* contract for cattle breeding, the owner of the animals supplies the adult animals, but then does not contribute in any cost; he gets his animals back at the time the calves are shared among the two actors.

The diversity in sharecropping contract terms shows the necessity to ground the analysis of contractual practices on more precise categories than just the generic concept of sharecropping, by distinguishing not only the way the product is shared, but also the ways the two actors contribute to the arrangement. It shows also the necessity to go beyond the generic local terminology, all the more since a same denomination can cover different contractual terms.

Regarding the way costs and product are shared in the sharecropping arrangement, the general rule distinguishes cases where the landlord does not contribute to the production up to the harvest and perceives one third or one fourth of the product, and the cases where he gets involved in the production and receives one half of the product¹. This general principle has however to be adjusted to integrate land scarcity (implicit valorization of land), the importance and structure of production costs, as well as the weight of harvest and transportation costs in the total cost. The very explicit logic underlying *a medias* arrangements is a search for equilibrium in the contribution of the partners ("*Hay que salir parejos*", "we have to make a fair deal"). Table 6 shows that the contribution of the landlord to production costs up to the harvest (excluding land valorization) is very variable, from zero (*al tercio* in Graciano Sánchez) to 40% (*a medias* contract for potato production in the Sierra), but that a global adjustment is revealed between the actors' cost and product shares once the landlord's contribution to harvest costs, and land valorization, are taken into consideration. In the one third and one fourth contracts, landlord contribution can be estimated between 20 and 30 % of total cost; in *a medias* contracts, this contribution varies around 45 to 60%.

3. Sharecropping as a polyfunctional institutional arrangement

From the point of view of actors leasing out, two main cases can be distinguished:

- Some landowners are not in a logic of production, they develop off-farm activities, and lease out all their land, favoring cash leases; this type of landlords has been encountered as a non-marginal group only in Graciano Sánchez.
- In the dominant case, landowners are in a productive logic; they use their land under owner cultivation as far as their available resources allow them. They lease out the remaining area, looking usually for a sharecropping arrangement. The type of sharecropping arrangement looked for (as long as there is local diversity in the types of sharecropping contracts) is then a function of leftover resources that could contribute to the production process: from *a medias* to *al tercio/cuarto* contracts, i.e., from an involvement in the production and a better share of the product, to a participation limited to the harvest, but with a lesser share of the product. They favor fixed leases only if they have urgent cash needs, or if they plan to invest that cash inflow in production costs in another plot.

1. This broad rationale in contractual terms appears also through the exploration of the literature dealing with sharecropping in contemporary Mexico. In the descriptions available, the half share comes along with a landlord's participation in the production process (Belshaw, 1967; Cochet, 1993; Finkler, 1978; Granskog, 1974; Léonard, 1995; Espin and Leonardo, 1978; Mummert, 1987; Turkenik, 1975; Stolmaker, 1973), and the one-third or one-fourth share corresponds to a pure land rent (Centro de Investigaciones Agrarias, 1970; Gledhill, 1991; McFarland, 1991; Turkenik, 1975).

From the lessees point of view, three main perspectives can be distinguished:

- Any contract other than a fixed lease is ruled out in the case of intensive vegetable cropping by *rancheros* (onion in Graciano Sánchez, potato in La Soledad). Three rationales intervene here: (a) with a fixed lease, the tenant gets the full return on his expertise and investments; (b) a share arrangement would require the capacity of the landlord to contribute to some extent to the production process; and even if the landlord had this capacity, it would have to be so on a relatively large area - otherwise the entrepreneur-tenant would face tremendous transaction costs; (c) lastly, as such type of actor is usually in a dominant position, he would have to have an interest in such a type of contract; what could smallholder lessors offer?
- In the case of *ejidatarios*, groups of *ejidatarios* or small entrepreneurs running 'technicalized' farming systems (cereal and oleaginous in Graciano Sánchez, barley in La Soledad), or medium-intensity colored potato production in the Sierra, the preference also goes indisputably to fixed lease (except under some conditions that will be further developed), but share contracts may be looked for because of cash or other constraints. The type of sharecropping arrangement then looked for is, here gain, a function of the available resources, but with the expected inversion when compared to landlords' preferences¹: from *al tercio* or *al cuarto* contracts if they can produce without a contribution of the landlord, to *a medias* in the contrary case.
- In the case of tenants in marginal ecological conditions such as San Lucas Quiavini, fixed leases are excluded.

Through the different case studies, sharecropping appears therefore predominantly as a device aiming at offsetting financing constraints (i.e., in a large measure, credit market imperfection); in a more 'crop-specific' or 'site-specific' way, it can also play a role in risk management or offsetting other market imperfections. The function of sharecropping as an incentive device also appears, but not as crucially as predicted by most theoretical models.

Offsetting financial constraints

Sharecropping arrangements may offset financial constraints in two ways. First, because the rent is paid *ex post*, i.e., on credit. Sharecropping then is an alternative to a fixed lease, with the typical case of *al tercio* contract in Graciano Sánchez for soybean-corn production. *Al tercio* and *al cuarto* contracts for potato production in the Sierra Madre comes under a similar rationale when they result from a tenant cash

1. I refer here to an 'active' type of landlord, not a 'land rent-seeking' landlord, who looks for fixed leases.

constraint, which excludes a fixed rent¹. In all these cases, the tenants would have preferred to lease under a fixed rent, but financial constraints impeded paying *ex ante* (i.e., before the sowing) a cash rent. The fact that these tenants do actually rent under fixed leases when they can (as shows the examination of present and past individual contractual practices), or that they try to develop the 'Procampo deal' (Graciano Sánchez), confirm their explicit rationale of contractual choices. Regarding this function of sharecropping as a rent on credit, an alternative arrangement could be a fixed lease paid *ex post* (i.e., after the harvest), but nowhere was such type of contract detected. Three (non exclusive) hypotheses can explain the fact that such an arrangement has not emerged: (i) the risk induced by the *ex post* fixed payment: the tenant might not be able to pay the rent after a bad campaign (Shetty, 1988), or could argue to delay or reduce the payment; (ii) landholders' preference/need for immediate cash; (iii) the difficulty to conceive and make acceptable a radically new institutional arrangement. Empirical data do not permit one to favor any of these hypotheses.

Secondly, sharecropping allows factor complementarity to play, when both actors contribute to the production process, and therefore economizes on cash expenses. The typical case here is the *a medias* contract in the Sierra Madre, as a mean to flexibly manage factors availability. This function also intervenes in the case of *a medias* arrangements that permit the landlord to economize on labor up to the harvest (San Lucas Quiavini), or to economize both on labor and inputs (corn and pea in La Soledad). From the landlord's point of view, *al tercio* and *al cuarto* contracts for potato production in the Sierra Madre bear the same rationale, for they provide a product that can be used as seeds the following campaign.

The financial constraint can be rooted in the lack of a credit system (other than usury credit) - in such a case, sharecropping would tend to decrease in importance if credit was made available; a negative relationship between access to credit and the acreage under sharecropping has indeed been perceived in all sites. The financial constraint can also be rooted in the actor's rejection of an indebtedness that could lead to the loss of the assets used as collateral (an attitude found also in the different sites). It can lastly come from the impossibility of financing totally or partially the production with a credit, when this production is highly aleatory and just not profitable (San Lucas Quiavini).

The relationship between equipment availability (yoke, tractor, transportation vehicle) and the financing constraint has to be stressed. Owning such equipment alleviates the financing constraint in two ways: as a source of cash, through the selling of services, and by avoiding cash expenses to get such services, when

1. But not when the tenants were looking for a fixed rent but accept landlords' proposal of a share contract, e.g.,

one lacks the equipment. This latter effect is especially noticed when yoke or tractor costs represent a major part of production costs, such as in Graciano Sánchez for cereal and oleaginous production, La Soledad for barley and corn, or San Lucas Quiavini. Conversely, it plays no central role regarding potato production, especially in the Sierra, when compared to the major constraints represented by seed availability and industrial input costs. More generally, and quite logically, the more the production requires the use of inputs that have to be bought on the market, the greater the potential financing constraint.

Managing uncertainty

Economic theory envisioning sharecropping as a pure risk management device (an approach that is not any longer favored in the literature) focused on the risk sharing effect of a rent proportional to the production. One does find elements, among these case studies, to sustain this interpretation (noting that in the actors' perspective, the right term would be uncertainty rather than risk), but also appeared a risk-minimization strategy regarding cash-cost losses (cf. infra).

Making the rent proportional to the yield as a way to manage production uncertainty concerns only the tenants - regarding this sole criteria, a cash rent would be preferable in the landlords' perspective. The *a medias* arrangement in San Lucas Quiavini gives us the best illustration where this function determines centrally tenancy practices, in a marginal agro-ecological environment. Uncertainty regarding the production also explains that in San Lucas Quiavini, once human and animal self-provisioning are considered as secured through corn and *zacate* production, the yoke and manual labor availabilities are invested in the markets for yoke services or wage labor, rather than in an increase in the acreage under tenancy cultivation (or rather than starting to sharecrop in, for those who could ensure self provisioning through owner cultivation). In the same logic, landowners who do not own a yoke, or whose land endowment exceed their yoke work capacity, prefer - once secured their self-provisioning - to lease out *a medias* rather than risking direct cultivation involving labor and yoke costs. In the case of pea production in La Soledad (lottery-kind of cultivation, due to highly volatile market prices), tenants look for *a medias* contract non only to avoid risking a cash lease (what would permit an *al tercio* contract), but also to reduce the costs engaged in production (economizing land preparation). The most striking risk-coverage device is the 'Percentage of the net result' contract in Miguel Hidalgo: there, cereal and oleaginous production is quite risky¹ and of a low economic interest (Table 3). Tenants (other than *rancheros* producing vegetable

because of the quality of the plot)

1. Soils in Miguel Hidalgo are of a poor vertisol type, not really suitable for cereal and oleaginous production in the rainy season, but quite suitable for vegetable cropping during the dry season. In Felipe Angeles, the soils are of a fertile fluvisol type.

crops) accept to lease in a plot only if they cover themselves against such risk, not only with a proportional rent, but also by sharing the net result, after deduction of all production costs. In these cases, it is not necessary to mobilize actors' 'risk aversion' to understand the risk management function of sharecropping.

What appeared however for some actors, or in some conditions, is an attitude differentiating clearly an aversion regarding the risk of losing cash investments, in parallel with a risk neutral/taking attitude regarding investing owned factors in the production process. In the Sierra Madre Oriental, some potato producers - especially among the smallest - tried to reduce the risk on cash expenses by finding tenants who would provide all or a good part of the inputs that have to be bought on the market, themselves providing owned factors. The *al tercio* contract for potato production in La Soledad reveals the same logic, even if it concerns wealthy *ejidatarios* - but involved in a sharecropping arrangement through large acreage¹: in this arrangement, the landlord furnishes mainly owned factors (land, mechanized equipment, and part of the manual labor). In San Lucas Quiavini, cost minimization (once self provisioning secured) was a 'structural' behavioral feature; as commented by Turkenik in her study of the Zapotec community of San Antonio Castillo Velasco: "*For any particular crop or season, their concern is only with out-of-the-pocket expenses*" (1975:276). Financing constraints and risk aversion regarding cash investments have the same effects on tenancy practices, through a cash-expenses minimization strategy. However, access to credit would eliminate the financing constraint, but would not necessarily change actors' attitude toward cash investment, much more linked with general wealth considerations.

Offsetting (other than credit-) market imperfections

Beyond resolving constraints induced by the lack of credit, sharecropping arrangement can, in the perspective of both the lessor and the lessee, help overcome constraints linked with other market imperfections:

- Market for yoke services: in San Lucas Quiavini, someone who has no yoke runs the high risk of not finding at the appropriate time someone to lease the yoke services (a highly imperfect market)². The solution is to lease out land to a sharecropper who owns a bull team.
- Market for (or public provision of) extension services: sharecropping can be a learning device, by meeting the need for technical and marketing capacity building, when there is no extension support. This is illustrated with La Soledad *ejidatarios* (as well as producers in the Sierra Madre Oriental some decades ago) willing to adopt potato cropping: leasing out land to a potato grower

1. Otherwise, the preference goes for *a medias* arrangements, no matter the type of *ejidatario*.

2. One finds here a situation identical that the Palanpour case (India), where, for the same reasons, owning a yoke is a prerequisite to sharecrop in (Bliss and Stern, 1982).

under a share arrangement is a way to get access to the tenant's expertise. Sharecropping plays here a direct role in technical change, refuting in the present context the idea that this type of contract would constitute a technical-change inhibiting institutional arrangement (Bhaduri, 1973)¹.

- Seed market: the producers from La Soledad who wish to adopt potato cultivation not only face the lack of extension support, they also face the lack of local market for seeds (the potato producers from the Sierra also face this constraint when they want to introduce new varieties). Leasing out to a sharecropper who will bring the seeds solve the problem.
- Forage market: in San Lucas Quiavini, some owners of bull team explain that they sharecrop in less for corn production than for *zacate* (corn stalk and leaves) production, used as forage, because of the risk of not finding *zacate* on the market at certain time of the year.
- Product market. One of the advantages that the *ejidatarios* of La Soledad find in leasing out land under a sharecropping arrangement is, as neophyte potato growers, to benefit the tenants' insertion in the marketing network.
- Insurance market. The fact that some sharecropping contracts have a risk management function is evidently related to the lack of insurance market.

The incentive/monitoring issue

The incentive issue is a (*the*) key component of most economic theories of sharecropping. This factor indeed has an impact on contractual practices, but not as an overwhelming impact as would be expected. In San Lucas Quiavini, once self-provisioning is secured, landowners tend to lease out under the *a medias* arrangement because it minimizes cash expenses, because of imperfection on the market for yoke services, because production is just not profitable, and also because if one contracts wage laborers, one has to supervise them. The monitoring issue was particularly raised by landlords who were women, elderly people or were mainly involved in off-farm activities, i.e., who were in the worst condition to effectively monitor wage labor. They viewed sharecropping as the solution (not just to the monitoring problem, but also regarding transaction costs linked to wage and yoke hiring). In La Soledad, when an 'outsider-tenant' - i.e., a non-resident tenant - leases in land to produce potato, he can do it under a fixed-lease arrangement and instal an agent in the village, who takes care of day-to-day crop management, contracts and monitors wage labor, contracts mechanized services (if the tenant does not bring in his own equipment). Indeed, that is what were doing the first potato growers who leased in La Soledad - those were very large entrepreneurs.

1. Access to expertise also intervenes in the *a medias* arrangement for cattle breeding in Miguel Hidalgo, when the owner of the animals (*ejidatario* or small trader) buy them as a saving device, but without having any technical ability regarding cattle breeding. The *a medias* contract is here again the solution, but under a 'permanent delegation' (i.e., not a learning) logic.

Regarding 'small entrepreneur-type' tenants, such a solution would require resources they don't have; leasing in with a share arrangement, with the local-resident landlord taking care of all these tasks, is the only solution they have. One can interpret it in an agency perspective: in order to give incentives to the agent so that he will manage the production as best as he can, he has to be made residual claimant through a share contract; but at the same time, this solution saves (i) on non-agency types of transaction costs (for a non-resident producer, contracting and monitoring wage laborers and mechanized services is translated into very high transaction costs, but not agency-type transaction costs), and (ii) on production costs.

More hypothetically - this would be the strongest impact of the risk of opportunistic behavior on contractual practices in the contexts we studied - the risk of moral hazard might rule out the emergence of a contractual arrangement in which a fixed rent could be paid *ex post* (Shetty, 1988). This would explain the frequent use of sharecropping with one third or one fourth shares as an alternative to fixed rents, for cash-constrained tenants. However, as we saw there are other alternative explanations. What matters here is the fact that in actors' perspective, a fixed-rent arrangement with an *ex post* payment just does not belong to their reference frame, to the range of possible coordination devices.

To sum up, moral hazard is far from being the major determinant of contractual practices in the situations studied. What appears clearly is the weight of the financing constraint, which can be interpreted in large part as credit rationing. In this logic, sharing the crop has to be explained either as a rent paid on credit (usually *al terciolal cuarto* contracts) or, as suggested by Jaynes (1982), as a resource pooling device (usually *a medias* contracts) between actors that are both producers under constraints.

Conclusion

Through these local investigations, the study has highlighted the relative importance of tenancy practices in the Mexican countryside, even before 1992. Although one cannot generalize the observation that the legal prohibition had no effect on the development of the tenancy market, these case-study findings strongly suggest that the impact of the legal reform will not be as dramatic as sometimes expected.

The findings illustrate the diversity of tenancy practices within the same country, in a same site, and sometimes for the same crop. Sharecropping appears as an informal, short-term and flexible coordination device—with a resulting high rate of turnover among the actors—used most often in parallel with owner cultivation.

The 'standard' agency approach of sharecropping conceptualizes this institutional arrangement as an implicit labor relationship, which rationale comes from Stiglitzian tradeoff between tenants' incentive and risk aversion, whereas transaction cost models of sharecropping tend not to put emphasis on risk and consider the role of different sources of transaction costs. In both approaches, the tendency, in economic literature on sharecropping, is (i) to interpret that institutional arrangement as an agency-problem-solving device and therefore to downplay the role of non-strategic transaction costs, actors' resource endowments, and (ii) to produce theoretical or empirical (econometric) models which, even if they are de facto and implicitly indexed on specific agrarian structures and production systems, are supposed to be of a general validity. Regarding this orientation, it is rather a kaleidoscopic picture that emerges through these few case studies. Sharecropping appears as a 'polyfunctional' institutional arrangement, with a large palette of possible *raison d'être*: first and foremost, offsetting financing constraints¹ (i.e., imperfect credit market and wealth constraints) by reducing cash costs (rent on credit, pooling of owned factors in exchange of inputs that otherwise would have to be purchased) and by pooling available cash (industrial input cost-sharing); but also offsetting seed, bullock or product market imperfections; offsetting search and monitoring costs, when one of the actors does not reside locally or is not able to carry out these tasks; spreading risk; or acting as a learning device. Depending on the tenancy configuration, the rationale for sharecropping can differ widely; the search for *the* model of sharecropping is therefore a lost-in-advance Grail quest.

Unless one locates contractual practices within a broad conception of the tenancy configuration, the explanation of the institutional arrangements will always remain 'indexed' on implicit contextual specificity. Of course, actors' resource endowments matter, relationships between actors matter, market environment (and imperfections) matters, the ecological environment matters, but what matters above all is the specific *combination* of these elements. Of course, sharp theoretical results provide powerful insights to explain tenancy arrangements; but these insights should not be viewed as exclusive. It should be clear that sharecropping, in the cases we studied, cannot be explained exclusively by risk-sharing, or by tenants' risk aversion, or by agency problems, or by transaction costs; the implicit conditionality of these theories should be kept in mind.

1. This argument was already put forward as one of the major explanations for sharecropping by classical economists such as Turgot. It has remained marginal in recent economic literature: for exceptions, see Shetty (1988), and especially Laffont and Matoussi (1995).

References

- Adelski E., 1987. Ejidal Agriculture in Northern Sinaloa, Mexico: Agricultural Resources, Production and Household Well-Being, Thèse de doctorat, University of Kentucky.
- Alanís Patiño E., J. López Bermudez, M. Mesa Andraca, 1951. Problemas de tenencia y aprovechamiento de las tierras en México, *Problemas agrícolas e industriales de México* 5(4):23-183.
- Barbosa R., S. Maturana, 1972. *El arrendamiento de tierras ejidales. Un estudio en Tierra Caliente, Michoacán*. México : Centro de Investigaciones Agrarias.
- Bardhan P. (ed.), 1989. *The Economic Theory of Agrarian Institutions*. Oxford : Clarendon Press.
- Bartra R., 1974. *Estructura agraria y clases sociales en México*. México : Era.
- Belshaw M., 1967. *A Community Economy: Land and People of Huecario*. New York : Colombia University Press.
- Bhaduri A., 1973. A Study in Agricultural Backwardness Under Semi-Feudalism, *Economic Journal* 83(329):120-137.
- Binswanger H., M. Rosenzweig (eds.), 1984a. *Contractual Arrangements, Employment, and Wages in Rural Labor Markets in Asia*. New Haven : Yale University Press.
- Binswanger H., M. Rosenzweig, 1984b. Contractual Arrangements, Employment, and Wages in Rural Labor Markets: A Critical Review, in *Contractual Arrangements, Employment, and Wages in Rural Labor Markets in Asia*, Binswanger H., M. Rosenzweig (eds.). New Haven : Yale University Press, pp. 1-40.
- Bliss C., N. Stern, 1982. *Palampur: the Economy of an Indian Village*. Oxford : Clarendon Press.
- Bouquet E., Colin J.-Ph., 1996. From Legal Norms to Local Land Regulation. A Case Study From Mexico, in *The Role of Law in Natural Resource Management*, J. Spiertz, M. Wiber (eds.), La Hague, Vuga Publishers, pp. 101-119.
- Centro de Investigaciones Agrarias, 1970. *Estructura agraria y desarrollo agrícola en México*. Volumes 1 à 3. Mexico : CDIA.
- Cochet H., 1993. *Des barbelés dans la Sierra. Origines et transformations d'un système agraire au Mexique*. Paris : ORSTOM.
- Colin J.-Ph. (ed.), 2003. *Figures du métayage. Etude comparée de contrats agraires au Mexique*. Paris : Editions de l'IRD.
- Colin J.-Ph., 2000. Le métayage au Mexique (XVI^e - XX^e siècle). *Histoire et Sociétés Rurales*, 14:55-89.
- Dasgupta S., T. Knight, A. Love, 1999. Evolution of Agricultural Land Leasing Models: A Survey of the Literature, *Review of Agricultural Economics* 21 (1):148-176.
- de Janvry A., G. Gordillo, J.-Ph. Platteau, E. Sadoulet (eds.), 2001. *Access to land, Rural Poverty, and Public Action*. Oxford : Oxford University Press.
- de Janvry A., G. Gordillo, E. Sadoulet, 1997. *Mexico's Second Agrarian Reform. Household and Community Responses, 1990-1994*. San Diego : Center for U.S.-Mexican Studies, University of California.
- Deininger K., G. Feder, 2001. Land Institutions and Land Markets, in *Handbook of Agricultural Economics, vol. 1A*, Gardner B., G. Rauser (eds.). Amsterdam : Elsevier, pp. 288-331.
- Dewalt B., M. Rees, A. Murphy, 1994. *The End of the Agrarian Reform in Mexico. Past Lessons, Future Prospects*. San Diego : Center for U.S.-Mexican Studies, University of California.
- Diskin M., 1967. *Economics and Society in Tlacolula, Oaxaca, Mexico*, Thèse de doctorat, University of California, Los Angeles.
- Espin J., Leonardo P. de, 1978. *Economía y sociedad en los Altos de Jalisco*. Mexico : Editorial Nueva Imagen.
- Eswaran M., A. Kotwal, 1985. A Theory of Contractual Structure in Agriculture, *American Economic Review* 75(3):352-367.
- Finkler K., 1978. From Sharecroppers to Entrepreneurs: Peasant Household Production Strategies under the Ejido System of Mexico, *Economic Development and Cultural Change* 27:103-120.
- García-Barrios R., L. García-Barrios, 1992. Subsistencia maicera y dependencia monetaria en el Agro semipolarizado: una comunidad rural mixteca, in *Reestructuración económica y subsistencia rural*,

Hewitt de Alcántara C. (ed.). Mexico : El Colegio de México, pp. 223-269.

Giedhill J., 1991. *Casi Nada: A Study of Agrarian Reform in the Homeland of Cardenismo*. Austin : University of Texas Press.

Granskog J., 1974. Efficiency in a Zapotec Indian Agriculture Village, Thèse de doctorat, University of Texas, Austin.

Hayami Y., K. Otsuka, 1993. *The Economics of Contract Choice. An Agrarian Perspective*. Oxford : Clarendon Press.

Hoff K., A. Braverman, J. Stiglitz (eds.), 1993. *The Economics of Rural Organization. Theory, Practice, and Policy*. New York : Oxford University Press.

Jaynes G., 1982. Production and Distribution in Agrarian Economies, *Oxford Economic Papers* 34(2):346-367.

Laffont J.J., M. Matoussi, 1995. Moral Hazard, Financial Constraints and Sharecropping in El Oulja, *Review of Economic Studies* 62:381-399.

Lastarria-Cornhiel S., J. Melmed-Sanjak, 1999. *Land Tenancy in Asia, Africa, and Latin America: A Look at the Past and a View to the Future*. Madison : Land Tenure Center, Working Paper 27.

Léonard E., 1995. *De vaches et d'hirondelles. Grands éleveurs et paysans saisonniers au Mexique*. Paris : ORSTOM.

McFarland Correa P., 1991. Changing Patterns of Sharecropping Arrangements in the Municipio of Allende, State of Guanajuato, Mexico, Thèse de doctorat, State University of New York, Anthropology.

Morett J.C., 1992. *Alternativas de modernización del Ejido*. Mexico : Diana.

Mummert G., 1987. The Transformation of the Forms of Social Organization in a Mexican Ejido (1924-1981), *International Social Science Journal* 39(4):523-541.

Olinto P., K. Deininger, B. Davis, 2000. Land market liberalization and the access to land by the rural poor: Panel data evidence of the impact of the Mexican Ejido reform, Working paper.

Otsuka K., H. Chuma, Y. Hayami, 1992. Land and Labor Contracts in Agrarian Economies: Theories and Facts, *Journal of Economic Literature* 30(December):1965-2018.

Pérez Avilés R., 1995. Mercado de tierras en el valle de Atilxco, Puebla, in *Mercado de Tierras en México*. Rome : FAO, pp. 67-107.

Rao H., 1971. Uncertainty, Entrepreneurship, and Sharecropping in India, *Journal of Political Economy* 79:3.

Reid J., 1977. The Theory of Share Tenancy Revisited - Again, *Journal of Political Economy* 85:403-407.

Shetty S., 1988. Limited Liability, Wealth Differences and Tenancy Contracts in Agrarian Economies, *Journal of Development Economics* 29:1-22.

Stiglitz J., 1974. Incentives and Risk Sharing in Sharecropping, *Review of Economic Studies* 41(2):219-255.

Stolmaker C., 1973. Cultural, Social and Economic Change in Santa María Atzompa, Thèse de doctorat, University of California, Los Angeles.

Turkenik C., 1975. Agricultural Production Strategies in a Mexican Peasant Community, Thèse de doctorat, University of California, Los Angeles.

World Bank, 2001. Land Policy and Administration: Lessons learned and new challenges for the World Bank's development agenda. Draft, PDF.

Table 1. Study areas

Sites	Land status	Differentiation in resource endowments	Type of farming systems	Sample size	Fieldwork done in:
Graciano Sánchez (Miguel Hidalgo and Felipe Angeles ejidos) (Tamaulipas)	ejido	++++	- vegetable crops (onion) - 'Green revolution type' (soybean, com, safflower) - intensive cattle breeding	72	1995-96
La Soledad (Tlaxcala)	ejido private property	+++	- 'Green revolution type' (barley) - 'traditional' (com) - vegetable cropping (potato)	39	1993-94 1997-98
Sierra Madre Oriental (Veracruz and Puebla). 1 st phase: 6 villages; 2 nd phase: case studies in 3 villages (Los Allos, La Toma, Tlanalapa)*	ejido communal private property	++	vegetable cropping (potato)	1st phase: 239 2d phase: 33	1990-91 1992
San Lucas Quiavini (Oaxaca)	communal ejido	+	'traditional' (mixed cropping com-squash-bean)	55	1993

* In the Sierra Madre Oriental, the research focused on a specific crop (potato), which covered at that time 70% of the area cultivated.

Table 2. Variable production costs and net expected gains per hectare under direct cultivation (1994 pesos) (exchange rate: around 0.33 US \$ for one peso)

Site	Productions	Costs per hectare			Net result per hectare			
		Total cost	Inputs	bullocks/tractor	Manual labor	Good yield/price	'Expected' yield/price	Low yield/price
Miguel Hidalgo	soybean-safflower	1500	360 (24%)	1020 (68%)	120 (9%)	1240	360	- 250
Felipe Angeles	soybean-corn	2170	485 (22%)	1515 (70%)	160 (7%)	1330	1330	
La Soledad	com	1340	85 (7%)	620 (46%)	625 (47%)		625	
La Soledad	barley	1690	800 (51%)	670 (40%)	160 (9%)		1065	
La Soledad	peas	3460	225 (7%)	560 (16%)	2675 (77%)	3630		- 1100
S. L. Quiavini	mipca	1385	30 (2%)	960 (57%)	695 (41%)	- 320	1700	- 460
Sierra Madre	potato	4160	1975 (47%)	960 (23%)	1225 (29%)	4700		- 500
La Soledad	potato	3540	595 (17%)	2125 (23%)	1230 (13%)	15860		5360

Basis: monetary evaluation for all factors; the figures do not include implicit land rent and interest rates. The evaluation of the net result per hectare is based on 'normal' situations as perceived by the actors: when yield or price variations are an issue in tenancy practices, different scenarios have been considered. 'Expected' yields correspond to what people consider as the usual yield in the local situation, cross-checked with sample production data (yield evaluation is based on statistical records only in Graciano Sánchez).

Table 3. Average acreage (ha) owned and tenancy practices

	Leasing in	Leasing out
San Lucas Quiavini	2.3	5
La Soledad	17.5*	5.6
Sierra Madre	7.4	5.7
Graciano Sánchez	10*	10

* excluding rancheros

Table 4. Contractual configurations

	Standard	Rentier/entrepreneur	Business partnership		Subsistence
			co-management	delegation	
Type of actors	landless laborer-like tenants vs. large landlords	reverse tenancy (well-endowed tenants vs. small landlords)	low differentiation	Reverse tenancy or low differentiation	low differentiation
Type of production system	'traditional' (corn)	high-intensity vegetable cropping (onion); 'green revolution' type of farming system (soybean, corn, safflower)	Medium to high intensity cropping (potato)	intensity vegetable cropping (potato)	'traditional' (milpa)
Key production factors	manual labor, yoke	mechanized equipment, seeds, fertilizers, agrochemicals, technical and marketing know-how	seeds, fertilizers, agrochemicals (technical and marketing know-how)		manual labor, yoke
Illustrations	Contractual relations in the haciendas	Graciano Sánchez	Sierra Madre	La Soledad (potato with 'outsider' tenants)	San Lucas Quiavini

Table 5. Types of contracts (% acreage)

	% land lease	Contracts regarding the main productions					%net result
			Fixed rent	'Procampo deal'	half share	1/3 or 1/4	
San Lucas Quiavini (milpa)	20%	Milpa	-	-	100%	-	-
La Soledad	24%	barley	86%	-	10%	4%	-
		corn potato	21%	-	44%	35%	-
Sierra Madre (potato)	40%	potato	49.5%	-	23%	27.5%	-
		Potato	10%	-	65%	25%	-
M.Hidalgo	81%	agricultural land	vegetable cropping	100%	-	-	-
		soybean-safflower	-	-	-	12%	88%
pasture	26%	Pasture	100%	-	-	-	-
		Animals	-	-	100%	-	-
F. Angeles	47%	vegetable cropping	100%	-	-	-	-
		soybean-corn	55.5%	5.5%	-	33.5%	5.5%

'Procampo deal': following the introduction of the Procampo program in Graciano Sánchez, in 1993-94, a new arrangement was developing for cereal and oil-seed production (crops which gave access to the subsidy), where the tenant had access to the land but left the subsidy to the landholder.

Table 6. Landlord's contribution to costs

	Production costs up to the harvest	Production cost including harvest	Total cost including land valorization	Product share
Sierra Madre, potato	0%	10%	19%	one fourth or one third
Felipe Angeles soybean/corn	0%	8%	22%	
La Soledad, potato	18%	22%	30%	
La Soledad, potato	28%	40%	46%	half
Sierra Madre, potato	40%	43%	48%	
San Lucas Quiavini, milpa	5%	30%	51%	
La Soledad, barley	24%	29%	53%	
La Soledad, pea	28%	47%	56%	
La Soledad, corn	32%	39%	60%	

The case of the 'Percentage of the net result' contract in Graciano Sánchez was excluded here, as this type of contract remains marginal. In San Lucas Quiavini, the implicit land rent is based on the only fixed lease we knew of at the time of fieldwork.