Chapter incomplete, but all relevant course material included

Land

22.1. Introduction

As explained in Chapter 18, an economy can react to an unequal distribution of land in a variety of ways. The land market can open up, with plots rented out or sold from landowners to those with a relative abundance of labor or other inputs of production (including access to credit markets). Alternatively, the labor market can become active, with hired labor working on the larger plots of land. We have already discussed how different considerations dictate the relative levels of activity in these two markets. In this chapter, we concentrate on the market for land.

A proper functioning of the land market is very important for the overall development of the economy. If land is held unequally and many individuals fail to obtain access to it, they are likely to leave agriculture in search of a less precarious source of living. This can lead to a situation in which large numbers of migrants crowd the cities a situation that can be politically, environmentally, and economically unpalatable.

Quite apart from political acceptability, there is the narrower question of *economic* efficiency in agriculture. Input markets such as the land market exist to bring the ratios of various inputs into line for efficient production. Do land markets serve this purpose or are they limited in their operation?

This chapter asks the following questions:

(1) How does the land rental market deal with substantial inequalities in the ownership of land? What are the main types of tenancy and how does the economic environment determine the form of the land rental contract?

(2) Are land rentals efficient? If not, which sorts of economic environments are more likely to create inefficiency?

(3) At a broader level, is inequality of ownership inefficient? Are small farms more productive than large farms?

(4) If the answer to question 3 is indeed yes, why don't we see frequent sales of land from rich to poor? What is the role of land reform?

22.2. Ownership and Tenancy

Table 22.1 shows how unequal the distributions of land are in the countries of Asia and Latin America. A huge percentage of the rural population is either landless or owns very small plots of land, in contrast with a small fraction of the population who own very large quantities of land. Look at the Gini coefficients of land distribution, for example. They are very high compared to corresponding estimates of the inequality in income distributions (see Chapter 10).

Although there is substantial inequality in Asia, land inequalities in Latin America are higher by an order of magnitude. It is true that average landholdings are smaller in Asia and the rural population density is very much higher, which perhaps explains, to some extent, why there are limits to inequality. After all, there is some lower bound to the smallest farm size that can be profitably used in cultivation. Latin American levels of inequality in Asia would surely drive the smallest plots to sizes that are just not feasible to cultivate. In this sense, a high population density places limits on inequality.

Using somewhat more recent data, Figure 22.1 plots Lorenz curves for land inequality in two Asian countries (India and Thailand) and two Latin American countries (Honduras and Colombia). The differences in the two sets of Lorenz curves are quite evident.

The low per capita holdings of land in Asia and the high inequality of landholdings in Latin America have a similar effect: a sizable fraction of the farms are owner-cultivated. In Asia this fraction is particularly high, standing at around 86% (see Otsuka, Chuma, and Hayami [1992]). The Latin American fraction is lower and also includes a significant fraction of very large farms that are cultivated with the use of hired labor. Table 22.2 shows the percentage of owner-cultivated farms in different parts of the world.



Figure 22.1. Lorenz curves for land holdings in two Asian and two Latin American countries. Source: Agricultural Censuses of Colombia (1988), Honduras (1993), India (1986), and Thailand (1988).

The African countries are somewhat of an outlier in this respect. Much of the land is held under forms of group or communal tenure, and individual claims on such plots are weak. Thus a small proportion of land is under owner cultivation simply because property rights are not well defined. The reported data are probably an understatement for all practical purposes, which reflects the ambiguity of property rights (*use* rights from plot to plot are better defined).

Also note that several countries provide for ownership or use rights to tenants who have worked the land for some prespecified number of years. This legal stipulation often lowers the amount of tenancy, and in the case of Asia there may be a substantial amount of informal tenancy that goes unrecorded in the data. Several countries in Latin America also uphold as a basic principle that the land belongs to those who farm it and have legalized this principle by regarding tenancy as a basis for granting use rights or ownership. This is true, for instance, in countries such as Mexico or Brazil. Such legislation has not always had a potent effect in turning land over to the

		Percent < 5 hee	tage of I	Farms an > 50		
Country	Operational Size (ha.)	Farms	Area	Farms	Area	Gini
Asia						
Bangladesh	1.6	90.6	67.6	n.a.	n.a.	0.42
India	2.3	88.7	46.7	0.1	3.7	0.62
Indonesia	1.1	97.9	68.7	0.0	13.6	0.56
Nepal	1.0	97.2	72.1	0.0	0.8	0.56
Philippines	3.6	84.4	47.8	0.2	13.9	
Thailand	3.7	72.3	39.4	0.0	0.9	0.45
Latin America						
Brazil	59.7	36.8	1.3	16.3	84.6	0.84
Costa Rica	38.1	48.9	1.9	14.5	79.7	0.82
Colombia	26.3	59.6	3.7	8.4	77.7	0.86
Peru	16.9	78.0	8.9	1.9	79.1	0.91
Uruguay	214.1	14.3	0.2	37.6	95.8	0.82
Venezuela	91.9	43.8	0.9	13.6	92.5	0.91

Table 22.1. Ownership distribution of farms and farmland in Asia and Latin America in the early 1970s. Source: Otsuka, Chuma, and Hayami (1992, Table 2).

tiller. Often, the reaction in Latin America has been in the direction of tenant eviction, followed by large-scale mechanized farming.

In India, for instance, the percentage of pure owner-cultivated land is almost certainly smaller than the data suggest. See the box on tenancy in the ICRISAT villages, where a higher prevalence of tenancy than that recorded in the national data is suggested. In the words of Jodha [1981]:

... in India, prior to independence, tenancy was largely viewed as an instrument of exploitation of the weak. Regulation of tenancy, therefore, became a key feature of post-independence India... [Thus] efforts directed to study tenancy *per se* usually have not succeeded. Because of the great capacity of farmers to hide it, agricultural tenancy simply disappears once one starts investigating it through the usual one or two round surveys.

At the same time, the preponderance of owner-cultivators in Asian countries such as Korea and Taiwan is not surprising at all. These countries exhibit a relatively low degree of inequality in landholdings, so there is less need to bring land into alignment with labor.

Whereas tenancy exists all over the world, there are variations in the form of the tenancy arrangement. Latin American tenancy is largely of the *fixed-rent* variety: the tenant pays a fixed sum of money to the landlord in return for the right to cultivate the land. In contrast, Asian tenancy is characterized by a high incidence of *sharecropping*, in which the tenant yields to the landlord an agreed-upon share of the crop. Asian fractions of tenanted land under share tenancy range from around 30% (Thailand), through 50% (India) or 60% (Indonesia), all the way up to 90% in Bangladesh. In contrast, the corresponding percentages in Latin America are much lower (under 10%

	Asia	Africa	L. Am.	Europe	N. Am.	World
Countries	10	4	15	12	2	46
Farms (million)	93.3	3.5	8.6	11.9	3.1	120.4
Farm size (hectares)	2.3	0.5	46.5	7.6	161.2	10.0
Distribution (%)						
Owner cultivation	85.8	5.2	60.3	67.6	63.2	79.2
Tenancy	5.9	1.6	17.1	9.3	12.0	7.1
Owner-cum-tenancy	8.2	6.9	6.6	23.0	24.8	10.0
Other	0.0	86.3	16.0	0.1	0.0	3.7
Distribution of farmland (%)						
Owner cultivation	84.0	9.2	80.4	58.9	36.6	61.1
Tenancy	5.9	3.0	6.2	12.5	11.9	9.0
Owner-cum-tenancy	10.1	29.1	5.6	28.5	51.5	27.2
Other	0.0	58.7	7.8	0.1	0.0	2.7
Percentage of share						
tenancy in tenanted						
land	84.5	0.0	16.1	12.5	31.5	36.1

Table 22.2. Distribution of farms and farmland by land tenure status in the 1970 World Census of Agriculture. Source: Otsuka, Chuma, and Hayami (1992, Table 1).

in countries such as Costa Rica or Uruguay and negligible in Peru, although relatively high at 50% in Colombia) (see Otsuka, Chuma, and Hayami 1992).

Why is the form of the tenancy contract of any interest? The answer to this question must be postponed until we have examined these alternative tenancy forms in greater detail, but a preliminary observation or two is not out of line at this stage. Typically, richer tenants engage in fixed-rent tenancy, because the landlord is relieved of all risk: the rent is the same whether the crop does well or not. Thus in this sense, fixed-rent tenancy requires that the tenant be willing and able to bear the risks of agricultural production. This is generally so if the tenant has substantial wealth of his own. This is (admittedly indirect) evidence for the assertion that Latin American tenancies are held by large farmers, and perhaps even evidence for the conjecture that many tenancies flow *from* relatively poor farmers *to* relatively rich farmers.

This concept is consistent with our discussion in the previous chapter. In a country with large landholdings, agriculture may take on a highly mechanized and capitalistic form, using wage labor where labor is required. In such a regime, it may be better for smaller landowners to give up their land to large owners in exchange for a rent.

Contrast this with Asia, in which the bulk of tenancy is in the form of sharecropping. As we will see in the sections that follow, sharecropping is an arrangement that has particular value when the tenant is small and averse to risk: if a given *fraction* of output is paid as rent, then the tenant is, to some extent, insulated against output fluctuations, because he can share some of these fluctuations with his landlord. This suggests that Asian tenancy probably reflects, on the whole, land leases from relatively large landowners to relatively small landowners. However, be careful not to treat this as a general rule, even in Asia.

We will begin our study of land markets by describing tenancy contracts.

22.3. Land Rental Contracts

Suppose that a landowner wishes to rent out his land to a potential tenant. Several contractual forms are available. The simplest form of tenancy contract is what is called a fixed-rent contract, one in which the landlord charges a sum of money (per year or per season) for the rental of the land and, in turn, allows the tenant to carry out production. This sort of contract is found wherever land rentals are observed, but by no means is it the only form of contract that we observe, or even (depending on the region of observation) the dominant form. A second type of contract is commonly referred to as *sharecropping*. Sharecropping comes in many flavors, but all of them involve the sharing of the tenant's output in some preassigned proportion between the landlord and the tenant. The proportions vary from country to country and across regions within a country, although a 50-50 division is commonly observed. Variations on the sharecropping contract include different proportions of division of the output depending on whether *input* costs are also shared between the landlord and the tenant, and tied credit arrangements. The latter normally involve the advance of money by the landlord for the tenant's purchase of output (in addition to or in lieu of cost sharing): these "interlinked" contracts will be discussed in Chapter 19.

There is a simple but useful way to write down a class of rental contracts that contains fixed rent and sharecropping contracts as special cases.¹⁷ If Y denotes agricultural output on the rented land, then write the total rent as

$$R = \sigma Y + \rho. \tag{22.1}$$

If $\sigma = 0$ and $\rho > 0$, this is a fixed-rent contract with rent ρ . If $\rho = 0$ and σ lies between 0 and 1, then this is a sharecropping contract, where the share to the landlord is σ and the share to the tenant is $1 - \sigma$. Finally, if $\sigma = 0$ and $\rho < 0$, this can be interpreted as a "pure wage contract," where the wage is simply $w = -\rho$: the tenant is not a tenant at all, but a laborer on the landlord's land. Labor contracts will be considered in Chapter 23.

Tenancy in the ICRISAT Villages

We introduced the ICRISAT study area in Chapter 17. We continue our study here by studying land tenancy in these villages.

Landholding distributions were (and continue to be) quite skewed in all the study villages, but in most of them there is a pronounced trend toward greater equality. Households with large landholdings seem to have shed some land over the decades, whereas many formerly landless families have gained some land. In the sample, 20% of the village population consists of people who were landless in 1950, but owned plots of their own in 1982. The proportion of formerly landed families who had lost all their land by 1982 is only 4%. In sum, whereas only 62% of the population owned land in 1950, that fraction grew to 82% in 1982. It appears that such (nontenancy) land transfers mostly took place through sales rather than through land reform measures that empower long-standing tenants with ownership rights. Over the three decades, the amount of land bought and sold annually, expressed as a percentage of total land endowment for the sample households, varied between 1% for Kalman to 4% for Dokur. These are not negligible figures.

¹⁷See Stiglitz (1974). The class that we describe can easily be extended to cover cost sharing in inputs.

We have to be very careful in the interpretation of such data. Faced with land ceiling acts that restrict the maximum amount of land a landlord can hold, it is possible (although unlikely) that land transfers through tenancy are declared to be transfers of ownership, wherein a tenant is required to report that he owns excess-of-ceiling land when he in fact does not.^a This suspicion received some support from an earlier study of Jodha [1981], which was based on the same survey area but on older data collected over a two year period beginning May 1975. In line with his view that tenancy is largely concealed, two years of field work were used to ascertain whether land was under tenancy or not, and "the initial concealment of tenanted plots disappeared over time." In Jodha's view, land transfers were also common during this period, but the bulk of such transfers (between 77 and 97%) were due to tenancy transactions alone.

Therefore, it is likely that the following data (although certainly vastly more indicative of widespread tenancy relative to the Indian National Census of Agriculture) still underrepresent the incidence of tenancy, or at least those forms of tenancy that involve land transfers from relatively large landowners to landless or small landowners. More circumstantial evidence indirectly supports this position, as we will see subsequently.

Agricultural tenancy is common (although not predominant relative to owner cultivation) in the ICRISAT villages. About 20% of all households sharecrop, and far less (below 5%) are fixed-rent tenants. Table 22.3 provides more detailed estimates ranging over the period 1975–82.^{*b*}

Villages	Households	Owners	Sharecropping tenants (%)	Fixed-rent tenants (%)	Mixed tenants (%)	
Aurapalle	406	90.7	1.2	8.1	0.0	
Dokur	220	82.3	15.9	0.9	0.9	
Shirapur	437	69.1	30.4	0.5	0.0	
Kalman	296	68.6	30.7	0.7	0.0	Sc
Kanzara	320	80.6	11.0	5.3	3.1	
Kinkheda	187	85.0	14.5	0.0	0.5	
Boriya	186	56.5	29.0	12.9	1.6	
Rampura	216	76.4	14.8	5.6	3.2	
All	2,268	76.8	18.2	4.1	1.0	

Shaban (1987, Table 1 (adapted)).

Table 22.3. Tenancy in ICRISAT villages by household.

The table lumps together all households who rent land. Some of them are "pure" tenants, but most tenants also own land of their own. For instance, "fixed-rent tenants" in the table refers to households who have *some* land under fixed-rent tenancy. It is interesting to note that 80% of all tenants cultivate some land that they own (Shaban [1987]).

Clearly, the land-lease market is fairly active (even if we neglect possible underreporting). It is also of interest to see that, overall, sharecropping is dominant as a mode of tenancy. This will yield a puzzle once we consider the Marshallian argument for the inefficiency of sharecropping (see the next section). Fifteen percent of all plots are sharecropped, whereas under two percent are in the form of fixed-rent tenancy. But there is variation across the villages. Fixed-rent tenancy is dominant in the village of Aurapalle, for instance.

Table 22.4 provides estimates of tenancy by area. The percentages of land that come under different forms of tenancy are quite similar to the corresponding percentages by

household. The table brings out additional features of some interest that have to do with plot *sizes* and *values*.^c Note that plot values are higher for owner-occupied plots than for tenanted plots. It is not surprising that the best quality plots are retained for owner cultivation.

	Owned			Sharecropped			Fixed Rent			
Village	Plots %	Area acre	Value Rs./acre	Plots	Area acre	Value Rs./acre	Plots %	Area acre	Value Rs./acre	
Aurapalle	96.4	1.9	21.2	0.5	1.5	13.8	3.1	2.0	14.0	
Dokur	84.1	1.6	42.2	14.9	2.2	40.2	1.0	1.9	40.0	
Shirapur	64.5	1.6	29.7	35.5	2.5	24.9	0.0	0.2	21.3	
Kalman	77.6	1.6	17.6	22.1	2.0	13.4	0.3	4.0	10.0	
Kanzara	83.9	2.6	22.6	12.3	3.7	18.9	3.8	3.6	11.7	
Kinkheda	92.2	3.5	15.1	7.7	2.9	10.6	0.1	2.0	10.0	
Boriya	67.1	0.7	39.3	25.5	0.8	39.3	7.4	0.7	35.2	
Rampura	80.7	1.0	62.8	16.1	1.2	60.7	3.1	1.4	56.2	
All	80.9	1.8	29.20	17.5	2.2	27.08	1.6	1.8	27.4	

Source: Shaban (1987, Table 2).

Table 22.4. Tenancy in ICRISAT villages by plots.

Now look at plot *area* in Table 22.4. In several cases, area is significantly higher on tenanted land than on owned land. This suggests that although tenants lease land from those who are more endowed than they are, they are certainly getting fairly sizable chunks of it. Indeed, this observation also indicates that "reverse leasing"—the leasing of land from relatively small to relatively large farmers—may be present in the data.

Reverse tenancy—the apparently perverse phenomenon of *small* landowners leasing out their land to larger ones—has been observed in many places and has attracted some (but not sufficient) research attention. It is certainly not rare in the ICRISAT data. On average, in tenancy relationships, 47% of the partners came from the same farm size group, 32% of leasings were reverse (small to large farmers), and 22% of the land was leased by large farmers to smaller ones. However, in Dokur, as many as 55% of the leases were reverse. Jodha [1981] and Shaban [1991] discussed this in more detail. In any event, we should treat the high incidence of reverse leasing with some caution: as previously discussed, leases from large to small farmers may be severely underreported.

Most leases covered in the study had a brief duration—frequently not exceeding one year. About 60% of the contracts were for one cropping season only. Landlords frequently shuffle and rotate their tenants; there has been an almost total demise of traditional long-term tenancy arrangements, such as the *rehan* system in Aurepalle. This demise can be ascribed largely to land reform legislation that makes it easy for long-standing tenants to acquire ownership of the plots. Some negative effects of this development are immediately apparent: with limited tenure, the tenant loses the incentive to apply in proper amounts such inputs as manure, which is known to have residual and lasting effects (stretching beyond a year) on crop yields.

The terms of tenancy arrangements showed some variability and flexibility across the villages. In Dokur, where the use of purchased inputs is fairly high, more than 90% of the contracts stipulate 50–50 output *as well as input cost sharing*. In contrast, in Shirapur, where use of purchased inputs is much less intensive, the tenant is responsible for supplying all inputs and receives a share of 50–75% of the output. In many cases, a landlord's failure to supply his proper input share or higher cultivation costs being borne by the tenant for within-season production adjustments led to renegotiation and

readjustment of the output shares. In those cases where the landlord shared in the cost of inputs, the landlord had a much greater say in the choice of the crop to be grown.

^{*a*}The reason why this bias is unlikely is because land can be held in the names of various family members in an attempt to avoid the ceiling. In any case, this is somewhat different from the more commonly accepted source of bias: tenancy is underreported because of the fear of land-to-the-tiller legislation. This source typically classifies tenanted land as cultivated by the owner, whereas the possible bias that we are discussing here classifies tenanted land as land owned (and cultivated) by the tenant.

^bThe sample in each village contains households for each season in each year. Thus multiple observations (over different periods) might be accounted for by the same household.

^cPlot values, which are supposed to reflect the potential market price of the plot (per acre), are influenced most by perceptions of soil quality on that plot and whether or not the plot is irrigated.

22.4. Incentives: the Smith-Marshall Doctrine

There is a long tradition in economics that argues that sharecropping is essentially an inferior system to that of fixed-rent tenancy. The argument is not new and can be traced all the way back to Adam Smith. In *The Wealth of Nations*, Book III (Ch. 2), Smith observes of sharecroppers that:

> "It could never, however, be the interest of this species of cultivators, to lay out, in the further improvement of the land, any part of the little stock they might save from their own share of the produce, because the lord, who laid out nothing, was to get one-half of whatever it produced."

A clear statement of the supposed superiority of fixed-rent tenancy can also be found in Alfred Marshall's *Principles of Economics*:

[W]hen the cultivator has to give his landlord half of the returns on each dose of capital and labor that he applies to the land, it will not be to his interest to apply any doses the total return to which is less than twice enough to reward him."

It is perhaps no coincidence that the early arguments came predominantly from English economists. At the time, fixed-rent tenancy was prevalent in England, whereas sharecropping (or *metayage*, as it was called, following the customary practice of 50–50 division) was dominant among the French. A little jingoism is good for a passionate argument, though it could prove to be wrong. But let's hear the case first.

The Smith-Marshall doctrine is based fundamentally on the need for the *appropriate provision of incentives*. A fixed-rent contract has the property that the tenant pays a fixed sum to the landlord no matter how much output is produced. Another way of saying the same thing is that the tenant retains 100% of any extra output that is produced. In contrast, sharecropping effectively leaves the tenant with some *fraction* of any additional output—a percentage such as 50% or 60%, depending on the exact form of the contract. Thus, *if the effort of the tenant cannot be monitored and controlled by the landlord, the tenant has an incentive to undersupply his effort*, because, under the sharecropping contract, part of the output produced by him gets siphoned off to the landlord. It would be better, instead, to extract this rent up front by charging a *fixed* payment and then leave the tenant alone.

This argument is pretty compelling but it is not the whole argument. If you are in a contentious mood, you could reply, "But what is so sacrosanct about the tenant keeping 100% of the extra output? Why not let him keep 110%, or even 120%, and charge an even higher rent up front? In that case the tenant would surely put in even more effort. If the move from 60 to 100% enhances efficiency, what is different about the move from 100% to 120%?" That isn't a bad question at all, and forces us toward a more careful exposition of the Smith-Marshall argument.

Although the demonstration to follow is more general, it is easily described by assuming that the tenant has just one variable input of production — e, for "effort". In Figure 22.2, we plot the production function that relates output to effort applied on the rented plot of land, which is given by the curve F(e). Of course, that effort is costly to the tenant: it has other uses. For instance, part of the tenant's labor may be hired out by him for a wage. Or he might have some land of his own to which he wishes to devote part of his labor endowment. Another alternative (though this is less compelling in situations of excess labor supply) is that the tenant may



Figure 22.2. Production, cost, and social surplus

simply value leisure. Whatever the reason, labor supply to the rented plot has a cost, shown by the line c(e) in Figure 22.2.

This depiction makes it very clear just how much social surplus is produced by the tenancy arrangement. The surplus is precisely the difference between the value of output and the cost of producing it; that is,

output and the cost of producing it; that is, the vertical gap between the curve F(e) and the line c(e). The surplus will vary, of course, with the amount of labor being applied. We are interested in the labor input level that yields the *maximum* possible social surplus, which is the vertical difference between the curves F(e) and c(e). One feature of this maximizing input level is that the value of the marginal product of labor, which is given by the tangent to the production function at this point, equals the unit opportunity cost of labor, given by the slope of the line c(e). This maximum surplus lies at stake in the tenancy.

Of course, the tenant himself has no necessary interest in seeking to maximize this surplus (through his choice of effort) unless



Figure 22.3. Fixed rent contract.

it happens to be in his interest to do so. Figure 22.3 shows how this incentive problem can be solved through the use of fixed rent tenancy contracts. Under a fixed rent contract, the tenant's return is diagrammatically shown by a *parallel* downward shift of the production function, obtained by subtracting the fixed rent at every point. The

difference between *this* shifted-down return and the tenant's cost, c(e), is what the tenant seeks to maximize.

The key observation is that this exercise is essentially identical to the maximization of social surplus. The imposition of a fixed rent gives the tenant the same incentives as those of some mythical social planner who seeks to maximize surplus, and therefore the choice of e will result in precisely the same solution e^* . Now all that's left is to

observe that total surplus must be distributed between the landlord and the tenant. The tenant can be given whatever he needs to be given by adjusting the fixed rent, and the landlord gets the rest as shown in the diagram. Therefore, not only is social surplus maximized, the landlord *should* want to maximize it in order to maximize her own return. Under no other arrangement can she do better, because other arrangements cannot have a larger social surplus, and the tenant must be compensated to the same degree. Thus spake Smith and Marshall.



Figure 22.4. Sharecropping contract.

In contrast, consider sharecropping, de-

picted in Figure 22.4. Because the landlord receives some share σ of the output, the tenant receives the remaining fraction $1 - \sigma$, and so the *effective return* to the tenant is the line $(1 - \sigma)F(e)$; that is, the production function multiplied by the tenant's output share. This is also a shift down, but not a *parallel* shift; it's more a swivel than a shift. And now the tenant will be interested in making the difference between *this* effective return and his cost c(e) as large as possible, because that's what *he* receives from the deal. Will he end up serendipitously maximizing social surplus, as he did for the case of fixed rent tenancy? The answer is no, and the reason is precisely because the effective return to the tenant is a "swiveling" or flattening of F(e).

This is a one-liner using calculus. With fixed rent tenancy, the tenant maximizes F(e) - c(e) - R, resulting in the first-order condition $F'(e^*) = c'(e^*)$, but with sharecropping, he maximizes $(1 - \sigma)F(e) - c(e)$, which results in the different first-order condition $(1 - \sigma)F'(\hat{e}) = c'(\hat{e})$. He will therefore maximize his own return at an effort input that is *smaller* than e^* . Figure 22.4 contains the graphic details.

In passing, we can easily answer why granting 100% marginal return to the tenant has special significance and why it is not optimal to offer contracts that offer still higher marginal returns (such as 110 or 120%). Of course, such contracts will make the tenant work very hard indeed, and will carry his input above e^* . But the fact that *output* is higher does not mean that *surplus* is higher. All this does is goad the tenant to work even harder than the level prescribed for surplus maximization. The economic surplus is therefore reduced in this case as well. Given that the landlord gets the surplus net of tenant compensation, she is better off offering the fixed rent contract.

22.5. A Critical Look at the Smith-Marshall Doctrine

If a fixed-rent system is demonstrably superior to a sharecropping arrangement, not only from a social efficiency angle, but also from the point of view of the landlord's individual rationality, then why does sharecropping enjoy such enduring popularity in real world practice? Surely, there is more to the story than currently has been outlined.¹⁸ And, to get an initial reaction out of the way: this isn't merely an intellectual curiosum dealing with arcane land contracts. That reaction would be misguided for several reasons.

First, if we do observe sharecropping where our basic theory of contracts tells us there should be none, then there is something wrong with that basic theory. At any rate, the theory needs to be augmented by a fuller description of reality. This enrichment may assist us in understanding other situations where the theory of incentives is also important. Second, and at a more practical level, if sharecropping exists despite the efficiency losses that it appears to generate, it suggests that there are other compensating factors that necessitate such an arrangement. If these factors can be separately addressed and corrected by appropriate policy, the resulting inefficiencies will decline. Third, these contractual relationships may have implications for other kinds of landlord and tenant behavior, such as the provision of credit to the tenant, the tendency to evict tenants, and the incentives to make long-run improvements on the land. Finally, "land and labor" is a parable for other real-world phenomena. Replace "land" by "capital" and "labor" by "entrepreneurs," and you are in the business of explaining the form that venture capital contracts must take. Or replace "land" by "patented knowledge" and "labor" by "technology importers," and you are now seeking to explain the form that licensing agreements might take. Smith and Marshall threw out an important challenge. We can't just stop there.

By the Way, Is Sharecropping Empirically Associated with Lower Yields?

The argument for the inefficiency of sharecropping relies on the assumption that the application of inputs by the tenant, such as labor, cannot be perfectly monitored and enforced by the landlord. If perfect monitoring were possible, the form of the tenancy contract would be irrelevant for our understanding of productive efficiency, because the efficient use of labor would be dictated by the landlord, irrespective of the particular choice of contract.

Can the levels of labor and other inputs chosen by the tenant be costlessly monitored and enforced by the landlord? Empirical work can shed some light on this issue. Shaban's [1987] study, using ICRISAT data, is one of the most careful contributions in this area. It is not enough to simply check whether there are differences in yield per acre across sharecropped land and other forms of land use. We must carefully control for several other factors that systematically vary with the form of tenancy (and not just the application of labor or other nonmonitored inputs). Shaban's study goes a long way toward handling these serious difficulties.^{*a*}

The main idea (which handles quite a lot of otherwise uncontrollable variation) is to study the productivity of the *same household* that owns some land and sharecrops other land. We have already seen that the ICRISAT data is full of such "mixed" families.

At one stroke, this insight permits the researcher to control for all sorts of familyrelated characteristics that vary systematically across owned and sharecropped land. For instance, families that own land may have better access to working capital than families that sharecrop, in which case the productivity on owned land may be higher; this

¹⁸See Singh (1989) for a survey of theories of sharecropping, which complements the observations here.

cannot be directly attributed to Marshallian inefficiency, however. Conversely, a poor sharecropper may have few alternative uses for his labor and thus may farm the land more intensively despite the disincentive effect identified by Marshall. Then productivity per acre will not be too different across owned or sharecropped land, but this does not rule out the possibility that the inefficiency is still there.

That's not all. It is possible that land quality varies systematically across tenanted and untenanted land. Indeed, we have already seen that this is true of the ICRISAT villages. Hence, a proper study must account for these systematic differences. The ideal tool in this respect is multiple regression (see Appendix 2): putting in several terms on the right-hand side allows us to control for the effects of these systematic differences. Shaban included plot values (see Table 22.4) as well as dummy variables for irrigation and other measures of soil quality. After all these variables are controlled for, the only remaining differences are expected to stem from the form of the tenancy contract.

The results are striking:

(1) Output and input intensities per acre are higher on the *owned* plots of a mixed sharecropper relative to the plots that he sharecrops: the average difference is 33% for output and between 19 and 55% for the major inputs.

(2) Quite a bit of this variation is due to irrigation, but certainly not all. With irrigation accounted for in the regression, output per acre is higher by 16% on owned versus sharecropped plots. Family male labor is higher by 21%, family female labor is higher by 47%, and bullock labor is higher by 17%. These differences also persist even if attention is restricted to sharecropper–owners who grow a single crop across the two types of plots.

(3) With irrigation and soil quality controlled for, there are no systematic differences between plots under fixed rent and plots under owner cultivation, just as predicted by the Marshallian theory.

These observations leave us with a vexing puzzle. If it is truly the case that sharecropping is inefficient, then why do we observe its existence? Indeed, sharecropping is the *dominant* form of tenancy in the ICRISAT villages: why do we see so much of it? Thus both theoretically and empirically, we are led to the same question, which we will now pursue in the main text.

^{*a*}Also notable is the earlier study by Bell [1977], who first suggested the sort of methodology later extended by Shaban and others.

22.5.1. Risk, Fixed Rents, and Sharecropping. An individual is *risk-averse* if she prefers a certain (i.e., known or deterministic) sum of money to a lottery with the same expected value as the deterministic sum. The very fact of variation or fluctuation around the deterministic sum is intrinsically displeasing to a risk-averse person. This is not to say that she cannot be compensated for taking risk. She can, but the greater the risk aversion, the greater will have to be the compensation (over and above the expected value of the lottery).

Observe that risk attitudes imply more than the ability to compare a risky gamble with a given amount of *safe* money. Two risky gambles with a common expected value can also be compared, and the one with the "greater spread" around their common mean will be deemed "more risky." As in the theory of inequality measurement, sometimes — and especially for two-outcome lotteries — this is easy enough to describe, though sometimes it is more complicated. As an example of an easy comparison, think of two

projects. The first pays off \$10,000 or \$2,000, each with probability 1/2. Now compare this project to another risky project with even odds — one that pays less (\$8,000) in the event of success, but pays more (\$4,000) in the event of failure. Both projects have the same expected value of \$6,000, but the latter project involves a lower "spread" in the returns. A risk-averse person would therefore prefer the latter project.

We now observe that there is a close parallel between this pair of projects, and fixedrent tenancy and sharecropping, also viewed as a pair of projects. To make this point, assume that the same quantity of inputs is being applied to the tenanted property in both cases (yes, I know I earlier argued that they won't be, but bear with this assumption for a minute). Now, just because inputs are fixed doesn't mean that *output* will be: the harvest is still heavily dependent on rainfall, pest invasions, plant disease and the like, and will vary. Say that only two levels of output are possible: *h* (for "high") with probability *p*, and ℓ (for "low") with probability 1 - p.



Figure 22.5. A risk-averse tenant dislikes fixed-rent tenancy.

Under a fixed-rent contract in which the tenant is required to pay a rent of R, the tenant receives a net reward of h - R if things go well and $\ell - R$ otherwise. (The landlord receives a sure payment of R irrespective of the fortunes of the plot.) Now imagine replacing this contract with a sharecropping contract which yields the same expected reward to the landlord (and therefore to the tenant as well). That is, if σ is the share of the crop accruing to the landlord, then

$$p\sigma h + (1-p)\sigma \ell = R,$$

so that

$$\sigma = \frac{R}{ph + (1-p)\ell}.$$
(22.2)

So much for the averages, then, which are equalized. Now compare the returns to the tenant for each state. If the output is high, then the tenant gets h - R under fixed rent, and $(1 - \sigma)h$ under sharecropping. Using (22.2), we may conclude that

$$(1-\sigma)h-(h-R)=R-\sigma h=R-\frac{hR}{ph+(1-p)\ell}<0,$$

by virtue of the fact that $h > \ell$. So a sharecropping contract *lowers* the return to the tenant in the high state. Because the two expected values are the same, we must also conclude that when the harvest is bad, sharecropping pays off better than fixed rent. Now the analogy with our earlier project pair should become clear: sharecropping and fixed-rent tenancy are like two projects with the same expected value, but the "spread" of returns to the tenant is narrower under sharecropping. If the tenant is risk-averse, he should prefer the sharecropping contract over the fixed-rent contract.

Figure 22.5 confirms this intuition for the usual textbook description of a "riskaverse" person. As you know from your introductory microeconomics classes, the preferences of such a person over monetary outcomes can be described by a strictly concave utility function, which captures his distaste for gambles. And indeed, as the Figure shows, the expected utility under a sharecropping contract that is calibrated to the same average monetary return as under fixed-rent tenancy is strictly higher than in the latter arrangement.

This is no mere artifact of some conveniently drawn utility function. When output is low, the burden of an unwavering rent can be enormous, especially for tenants who are relatively poor. It is true that the tenant is equally compensated on the upside, but that compensation is only paid in the high state, when the tenant least needs it. Meanwhile, the landlord is nicely insulated against such fluctuations, receiving a deterministic *R* in high and low states.

But who needs the insurance more, the tenant or the landlord? The relative wealth of landlord and tenant must play a significant role in the answer. If the landlord is relatively poor, leasing her land out to a rich tenant with capital, then the argument above can be turned on its head. Fixed rent tenancy then protects the relatively poor economic agent (the landlord, in this case), against unseemly fluctuations in her income. The case for fixed rent is strengthened, and Smith and Marshall gain more ammunition for their arguments. But if the landlord is wealthy and the tenant poor, then the opposite argument acquires power: sharecropping insures the tenant against fluctuations in income, whereas fixed rent might expose him to unacceptable levels of risk.

Now, it isn't that the landlord particularly cares for the tenant. But she understands that there is potential gain in compressing the fluctuations in her tenant's income. For instance, she could move from a fixed rent contract to an equivalent sharecropping contract, giving the tenant more insurance, and then cut back a bit on the tenant's share. That way the tenant would *still* prefer the sharecropping contract, while the landlord, who is relatively risk-neutral, enjoys a larger expected payoff. In this way, sharecropping might emerge as a way to share, not just the output of productive activity, but the *risk* that is associated with it as well. A tenant who pays fixed rent might happily agree to switch to sharecropping, passing on some of the uncertainty to his landlord.

We have cut some corners with this explanation, and it is now time to go back and examine the missing steps. The main counter-objection to our argument may be summarized thus: if the objective of the contract is to remove risk from the risk-averse party (tenant) to the risk-neutral party (landlord), why stop at sharecropping? It is possible to reduce tenant uncertainty even further. Consider, for instance, the payment of a fixed *wage* to the tenant equal to the expected value of the tenant's return under sharecropping. A risk-averse tenant would strictly prefer the wage to the share contract, so much so that he would give up even more income for the added insurance, which the landlord could then pocket. We now a situation where labor is effectively being hired rather than land being leased out.

However, two considerations stand in the way of an unequivocal conclusion. First, in many situations the landlord and tenant may *both* be risk-averse, though it might be reasonable to suppose that the latter is more so than the former. Fixed rent places all the uncertainty on the tenant, but a fixed wage places all the uncertainty on the landlord. If both parties are risk-averse, neither of these extreme contracts may be an acceptable solution. An intermediate outcome in which both individuals share risk may be preferred. Such intermediate contracts would closely resemble sharecropping.¹⁹

¹⁹I say "resemble" because the theory is not sharp enough to predict that the shares accruing to each individual would be independent of the level of output.

The second consideration that stands in the way of a wage solution is the incentive problem. Remember Marshall's argument. Just because we *presumed* that labor input is fixed (recall our temporary assumption) does not mean that it is so. The lower the share to the tenant, the weaker are his incentives to supply effort. In the extreme case, the hiring of wage labor is impossible unless there is a direct supervision system to ensure that the laborer is putting in the required effort. Thus we find a tension between the need to provide incentives to the tenant and the need to insure him. *This combined problem is fundamental.* The landlord will offer an appropriate contract to balance incentives and insurance, but trading off some insurance necessarily implies that full efficiency isn't reached: such efficiency is incompatible with the landlord's own objectives.

There is another objection to the risk-sharing argument for sharecropping (see Newbery 1977). In a world where only fixed-wage and fixed-rental contracts are present, an individual agent (landlord or tenant) can control her degree of exposure to risk by merely diversifying the use of her assets and resources across fixed-rent contracts and wage contracts. Thus, landlords may lease out part of their land on a fixed-rent basis and earn secure incomes from land leased in this way. The rest can be cultivated by hired wage labor, which produces higher expected returns, but attaches the associated risk to the landlord. Similarly, a landless person may spend part of her time as employed wage labor to obtain a minimum base income and invest the rest in cultivating leased land on a fixed-rent basis, taking her chances with that venture. This kind of diversification may have the added benefit that the disincentive effects and distortions may be smaller compared to a system of full-fledged sharecropping.

There are three counterarguments to this objection. First, as already noted, fixedwage contracts have their own incentive problems, so it is far from clear that a *combination* of fixed-rent contracts (which are good for incentives) and fixed-wage contracts (which are bad for incentives) must dominate sharecropping (which is middling for incentives). It all depends on how easy it is to get around the monitoring problem for hired labor. This may be possible in cases where large scale hiring of labor occurs, so that it pays to hire specialized supervisory labor.

The second counterargument is that the mixing of different contracts may be difficult to accomplish in practice. It all depends on the structure of the labor and tenancy markets. Some employers may demand full-time work to be carried out on their plots. This is especially of concern during the harvest season, when proper timing is of the essence. A person who finds employment during this season (and this is the season when most employment is available) may not be able to simultaneously deal with harvesting additional output on leased land.

Finally, other forms of uncertainty might make their appearance felt in the labor market and make the wage rate itself uncertain. Even if mixing is possible, it may not be possible to find a "safe asset," such as a fixed-wage contract that is lacking in all uncertainty. In such circumstances sharecropping may well dominate whatever can be achieved by mixing fixed-rent tenancy with a risky wage contract (Newbery 1977).

22.5.2. Limited Liability. If a tenant is poor and his output is uncertain, then quite apart from considerations of risk aversion, there may be states of the world in which the tenant will not be *able* to pay a fixed rent. Landlords who charge fixed rent will

therefore know that such rent cannot always be paid. If the tenant is poor and the harvest fails, the rent will have to be forgiven or essentially advanced as a loan. However, there is no guarantee that the loan will be repaid in the future, so part or all of the rent may truly have to be forgiven. This constraint, stemming from the tenant's small wealth and the small output that he might produce, is known as *limited liability*.

The problem with the "forgiveness arrangement" just described is that it creates an incentive for the tenant to overinvest in risky methods of production (Basu 1992). This is because if production fails, rent is forgiven, whereas if it succeeds, the tenant gets to retain all the excess (under fixed-rent tenancy). We shall pursue this particular incentive problem in more detail in the context of credit contracts: see Chapter 19. One way to counterbalance this tendency is for the landlord to lower the rent in bad states and raise it in good states. This gives a tenant a stake in the bad outcome as well and reduces his tendency to overinvest in risky forms of farming.

But a lower rent in bad states and a higher rent in good states is akin to sharecropping. Of course, as tenants grow richer, the limited liability constraint bites less and less and then one can return to fixed-rent tenancy. This also implies that we should observe more fixed-rent tenancy if tenant wealth is higher. This observation is related to the notion of *tenancy ladders*; see Shetty (1988) and Sengupta (1997), who study the implications of limited liability for share contracts.

22.5.3. The Double-Incentive Problem. Is leased land farmed only by the tenant and his family, and the laborers hired by them? It depends. If land is leased out by a small landowner to a large tenant or by an absentee landlord who is only interested in maintaining a secure source of rental income, the landlord usually will not be involved with the leased land in an ongoing way. Typically such leases are carried out on the basis of fixed rent, because minimal activity on the landlord's part (such as verification of tenant output) is required. In fact, the landlord would not care whether the land is even cultivated or not, as long as the rent is paid.

On the other hand, there are situations in which the landlord is deeply involved with the crop grown on the land, the methods used for cultivation, the inputs used, and the proper maintenance and care of the leased plot. The landlord may be in a position to make suggestions, to provide managerial care, and supply inputs of production. Some of these inputs may be noncontractible, just as the tenant's labor is noncontractible because it cannot be observed or verified by the landlord.

Now we're in a bind, even if both parties to the contract are risk-neutral. Recall the Smith-Marshall inefficiency argument: under an arrangement such as sharecropping, the tenant gives away some marginal output, and so has an incentive to undersupply effort. That is still a valid argument here, but the issue is one of providing incentives to *both* tenant and landlord. This is the *double incentive problem*.

If the tenant gets to keep the entire marginal output from the land, the landlord keeps none of it. (That's fixed-rent tenancy.) Of course, the tenant will then work very hard, but the landlord will have no incentive to put in effort on the leased land. Now suppose the landlord gets to keep the entire marginal output from the land, but the tenant keeps none of it. (This is the case of wage labor where the landlord is really an employer and the tenant is really an employee.) In this case, the landlord will have all the incentive to put in effort and the tenant-laborer will have none.

So we are in a double bind: the Smith-Marshall argument applies in both directions, and we can no longer say that fixed-rent tenancy does better than sharecropping. Sharecropping may be a compromise solution in which both landlord and tenant put in some effort. Eswaran and Kotwal (1985a) study this extension.

These arguments can be succinctly expressed with the help of a little algebra. Label the landlord by 1 and the tenant by 2, with landlord supply input e_1 and tenant supplying e_2 . We can then write aggregate output on the land as a production function

$$Y = F(e_1, e_2).$$

Let $c_1(e_1)$ and $c_2(e_2)$ stand for the two input cost functions for landlord and tenant respectively. As before, social surplus stands for the aggregate payoff to landlord and tenant, which must sum to

$$F(e_1, e_2) - c_1(e_1) - c_2(e_2),$$

no matter how the output is divided across the two individuals. If the production function has diminishing returns to each input, social surplus maximization is described by the following *pair* of first order conditions

$$\frac{\partial F(e_1^*, e_2^*)}{\partial e_1} = c_1'(e_1^*) \text{ and } \frac{\partial F(e_1^*, e_2^*)}{\partial e_2} = c_1'(e_2^*).$$
(22.3)

Let's abstract from the other considerations we've been discussing, such as risk or limited liability, and return to the world most conducive to Smith and Marshall, in which the optimality of fixed rent tenancy is easily established (Section 22.4). With double moral hazard, can the conditions in Equation (22.3) be willingly implemented by the two parties to a suitably constructed contract?

The answer is no, and can be most transparently seen in the class of contracts introduced in Equation (22.1), which writes the rent accruing to the landlord as

$$R = \sigma Y + \rho.$$

where ρ is a transfer (positive or negative) from tenant to landlord, and σ is the output share to the landlord. Under any such system, the landlord and tenant will choose effort e_1 and e_2 to independently maximize

$$\sigma F(e_1, e_2) - c_1(e_1) + \rho$$
 and $(1 - \sigma)F(e_1, e_2) - c_2(e_2) - \rho$.

These must give rise to the first order conditions

$$\sigma \frac{\partial F(e_1, e_2^*)}{\partial e_1} = c_1'(e_1^*) \text{ and } (1 - \sigma) \frac{\partial F(e_1^*, e_2^*)}{\partial e_2} = c_1'(e_2^*), \quad (22.4)$$

and casual inspection of (22.4) will convince you that these equations cannot line up with the conditions for social surplus maximization, described in (22.4), *no matter* what the values of σ and ρ are.

There is still a "second-best" optimum though, one that acknowledges that full efficiency cannot be attained because of the double incentive problem. The important point is that that second best solution will generally not involve fixed rent tenancy. For if it did, then $\sigma = 0$, and the first equation in (22.4) then informs us that e_1 will be set equal to zero, which would lead to low production levels on the farm.

22.5.4. Cost Sharing. Sharecropping may be the preferred contract when input costs can be shared between landlord and tenant. This is a potentially tricky issue, because we are saying in the same breath that the use of inputs cannot be pre-specified by the landlord, while at the same time their use costs can be shared. But there is no deep mystery here. There is typically no court of law to which the landlord can take a case, if the tenant does not agree to her stipulated use of inputs. Moreover, she may not *want* to stipulate input use. There could be variations in, say, optimal fertilizer use or in timing that only the farmer knows deeply about, and the landlord does not want to concern herself with. In this context, the Smith-Marshall doctrine may be entirely relevant: there is a genuine moral hazard problem.

Suppose, however, that the inputs in question are observable to both parties and their cost can be shared. For the sake of argument, say that the only input in production is fertilizer. The landlord could share the tenant's cost of applying fertilizer. Now consider the effect that this has on the choice of fertilizer input by the tenant. He will equate the marginal product of fertilizer *that accrues to him* to the marginal cost of fertilizer *that he pays*. Under sharecropping, the marginal product he receives is half the true marginal product, and with cost sharing thrown in, the marginal cost faced by him is halved as well. This restores efficiency, because marginal product



Figure 22.6. Cost-sharing combined with sharecropping.

is then equated to marginal cost. Figure 22.6 graphically explains this simple yet powerful argument. Notice how the tenant's retained output function *and* his cost function are swiveled or flattened to the same degree, so that the net effect on his input choice is unchanged.

Matters are more complicated when there are many inputs of production — some observable and some not. Then the Smith-Marshall inefficiency argument still applies to the inputs that are unobservable, whereas with judicious cost sharing it can be avoided for those inputs that are observable.²⁰ If the tenant is risk-neutral, it is still better (barring the other considerations raised in the previous subsections) to lease out the land on fixed-rent tenancy, but if the tenant is risk-averse or has limited liability, the insurance advantage makes a sharecropping contract potentially attractive, as already discussed. If several inputs are contractible and if cost sharing can be used, then the relative advantage of sharecropping is further heightened. Newbery and Stiglitz (1979) study some of these issues.

The following brief description of share contracts in the Sindh region of Pakistan illustrates some of the points of this subsection and is relevant for some of the observations made in the previous subsection as well.

²⁰These statements are somewhat loose. Marshallian inefficiency is not really defined "input by input," but by the entire complex of reactions to a particular contract. This also means that if some inputs are not contractible, the optimal cost share on the contractible inputs are not generally equal to the output share.

Sharecropping in the Sindh, Pakistan

Share tenancy contracts in the Sindh are referred to as *batai*; literally, a division.^{*a*} The landlord leases land in return for a share of the harvest; the tenant provides the labor. The costs of other inputs of cultivation—seeds, fertilizer, and pesticides, for instance—are borne by *both* landlord and tenant under a variety of cost-sharing rules. To be sure, the *crop* share and the *cost* share are closely linked. For example, a tenant who assumes sole responsibility for land preparation (i.e., provides all labor) and who has a one-half share in the cost of all other inputs gets a one-half share of the crop. This arrangement is viewed as the most common form of *batai*.

However, the 50-50 share is becoming less frequent, particularly in Sindh. The tenant's crop and cost shares vary between one-half and one-sixth, and intermediate crop shares of a one-third, one-fourth, or one-fifth are also observed. Mechanization is partly responsible for the fall in the tenant's share. Labor-intensive tasks such as land preparation and threshing, which were traditionally the sole responsibility of the tenant, are now accomplished wholly or partly with machines. Thus active landlord involvement in cultivation is present.

Multiple cropping has also increased the use of hired labor on tenanted area. The agricultural year typically consists of two seasons. In one season, a food crop (wheat or rice) is grown, and in the other, cash crops (cotton, sugar cane, and fruits) are grown. With the advent of multiple cropping, two or more crops (such as cotton and sugar cane) may need to be harvested simultaneously, while another crop (red chilies, for instance) is being planted. This situation has dramatically increased the use of hired labor on the share tenant's plot. These changes have raised the monetary costs of cultivation and reduced the tenant's role as provider of labor and draft animals. Tenants who get a one-fourth or smaller share, typically do not have draft animals and are not responsible for land preparation. The tenant's share of payments made to thresher operators and hired harvest labor are equal to his crop share.

Multiple cropping and the increasing focus on cash crops has made farming a more lucrative business. If alternative opportunities for tenants do not rise at the same rate (e.g., due to increased mechanization), a reduction in the tenant's crop share is a likely outcome. Sometimes the tenant's share differs by crop. They may get one-half or one-third of the food crop, but only one-fourth or one-fifth of the cash crop. In some cases, tenants work as agricultural wage labor in the season when the cash crop is grown and as share tenants in the season when the food crop is grown.

 $^{\it a}{\rm I}$ am grateful to Ghazala Mansuri for providing me with the material on which these observations are based.

22.5.5. Dynamic Incentives and Relational Contracts. The Smith-Marshall doctrine argues that the tenant cannot be compelled to supply the right levels of effort, where "right" is defined from the point of view of the landlord. He must be incentivized. Yet those incentives generate risk for the tenant, and (as we've already argued) that can also make sharecropping profitable. But so far, we've made all these arguments in a static setting. New considerations and opportunities emerge when we consider contract *renewal*.

Specifically, while a landlord cannot take a tenant to court for not putting in the efficient amount of effort, she can certainly threaten — implicitly or explicitly — to

replace the tenant.²¹ For instance, she might know that the tenant has spent excessive time farming his own plot of land instead of working on the rented plot, but cannot *prove* it. Ergo, this event cannot be used in legal contracting, but it can be used in the decision to *renew* a contract. After all, if our tenant is no worse than other tenants, then it is entirely credible for the landlord to informally promise that she will renew the contract. At the same time, the tenant will be aware that it is also credible for the landlord to not renew the contract if he, the tenant, shirks. Contract (non-)renewal can be based on information in ways that an ordinary contract *cannot* mimic.

These dynamic threats or incentives go under the rubric of *relational contracts*. They're contracts all right, but their continuation is based on observations or "relationships" that cannot be verified in a court, and don't need to be.²² That gives the landlord an additional instrument — the threat of non-renewal — through which effort incentives are provided or reinforced. I hasten to add that I am not passing a moral judgment on this system, for there are many reasons why eviction threats could be seriously problematic. (See the discussion to follow, as well as the box on Operation Barga below.) But let us be clear-eyed about what they can do.

The threat of non-renewal substitutes for current incentives and enables the landlord to offer a suitably compressed contract to the tenant. The greater the compression of rewards, the better the insurance that she offers, but the cost of that must come in the form of dynamic incentives that require her to give the tenant more than her next-best option. We have already seen these self-enforcing contracts when we studied credit markets in Chapter 19, and we will meet them again when we take up the topic of permanent labor in Chapter 23. They involve giving the tenant a premium in the here and now, relative to his outside option. The potential loss of that premium serves as the incentive to exert suitably high effort. The landlord will have to examine closely whether she is willing to pay the additional compensation required to acquire a credible instrument based on eviction.

This gap between contract and alternative is an undeniable plus for the tenant. If eviction were to be banned and there is an excess supply of potential tenants, a *new* tenant will not be given any more than his next best alternative. In particular, it is not surprising to observe that, despite the vicissitudes and uncertainties of tenancy, tenancy is still preferable to landless labor.

That said, the overall effect of potential eviction on the welfare of the tenant needs to be examined with caution. Certainly, eviction comes with the possibility of serious damage. It is one thing to say that the contract will be renewed contingent on "satisfactory performance," but there are always dangers in fully agreeing ex post upon what that satisfactory performance exactly entails. Or the tenant may fail the test for genuine reasons that are hard to foresee, such as a family illness. So the eviction threat could introduce a new form of risk for the tenant, and he will have to be compensated for this risk; otherwise he will not accept such a contract. In addition, there are other potential sources of loss. Chief among these are activities that increase the long-run earning potential of the land, which the tenant will now be less willing to carry out, for fear that he will not be around to enjoy the fruits of that investment.

²¹The literature on eviction includes Singh (1983), Bardhan (1984), Dutta, Ray, and Sengupta (1989), and Banerjee, Gertler and Ghatak (2002).

²²A large literature on this topic includes Bull (1987), Pearce and Stacchetti (1988), MacLeod and Malcolmson (1989), Levin (2003), Kostadinov (2020), and Watson, Miller and Olsen (2020).

22.5.6. Power and Efficiency. In all the arguments above, we've taken for granted the fact that tenants have some outside option, and that the landlord seeks to maximize her payoffs subject to providing the tenant the value of that outside option. Like Smith and Marshall, we as analysts are interested in overall systemic efficiency, but our inquiry so far has been constrained by the existing allocation of power across landlord and tenant. The land is the landlord's land after all, and she holds the cards. That said, though, and in the interests of a broader exploration of these matters, there is no particular reason why we should regard the power allocation as a given.

Our discussion of eviction is relevant here. Banning eviction does not grant the tenant property rights over the land, but it does grant him *use* rights, and use rights do confer power. A ban can greatly increase the economic welfare of incumbent tenants for this reason. No longer can the landlord offer a contract to which the tenant can only respond with a meek "yes" or perhaps a slightly more dignified "no." Now the contract can be bilaterally bargained, because with the banning of eviction, the landlord is *not free to offer the plot to an alternative tenant*, even though she owns the property.²³

This much is obvious. What is less obvious is that such a ban can increase social surplus because it transfers power to the tenant and in this way naturally improves on his incentives for effort provision. Return to the Smith-Marshall doctrine which asserted that a fixed-rent contract *both* maximized the landlord's return *and* social surplus. However, as soon as we introduced the realistic features of uncertainty and risk aversion, fixed-rent tenancy represented too much of a risk for the tenant. Those output fluctuations for the tenant can be tempered to some extent by sharecropping, but we also noted that this gives rise to an incentive problem, which lowers productivity. We concluded that there is a fundamental trade-off between the provision of incentives and the provision of insurance, and that this tension meant that maximal productivity will *not*, in general, be attained.

But now we qualify that statement a bit more: maximal productivity will not, in general, be attained *unless the landlord substantially raises the tenant's share of rent*. However, the landlord has no interest in productivity per se: what does she stand to gain if that increase in productivity (and then some) is passed on to the tenant? But this change *can* be achieved through effective legislation. If eviction is banned, the tenant can increase his share because of his better bargaining position.²⁴ At the same time, there is a potential loss in incentives because the eviction instrument cannot be applied. Which effect dominates is ultimately an empirical question. The box on Operation Barga, a program of tenancy legislation implemented in West Bengal, summarizes an empirical test of these ideas carried out by Banerjee, Gertler and Ghatak (2002).

Operation Barga

The Land Reforms Act of India (1955) and its subsequent amendments stated that all sharecroppers will have *permanent* use rights on land that they lease, and, moreover, that such rights will be inheritable. Such incumbency rights could be claimed as long as

²³However that same policy may have entirely different consequences for potential tenants; say, those who are currently landless laborers. For them, fresh tenancy contracts become much harder to get, and, all other things being equal, this will reduce their welfare.

²⁴This is one way to interpret the point made by Mookherjee (1997).

sharecroppers paid the legal share of the crop to their landlords or did not leave the land uncultivated, or unless the landlord wished to take back the land for personal cultivation.

Loopholes such as the italicized phrase in the previous sentence have tripped up land reform legislation for decades. Landlords have routinely used the personal cultivation clause to evict tenants.

There was another major barrier. A tenant would have to formally register his status (as a tenant) with the government. But few tenants registered, faced as they were with potential intimidation from their landlords, the loss of other forms of support such as consumption credit, and the prospect of a long and arduous legal battle if they truly wanted to dispute an eviction.

The Left Front came to power in West Bengal, India, in 1977 as the ruling state government. In existing tenant laws they found possibilities to advance their agenda of agrarian reform. Even though these laws conferred only use rights and not ownership, they had potential anyway. The Left Front carried out a two-pronged attack. It took the no-cultivation clause seriously and closed off this loophole. Simultaneously, it encouraged the registration of tenants through a much publicized program called Operation Barga (the term *barga* stands for sharecropping). The peasant organizations of ruling political parties worked along with village-level administration to encourage registration. They thwarted collusion between landlords and local officials and prevented intimidation. "Settlement camps," which were already being used by land reform officials to maintain and update land records, were actively used as tools of registration; registration certificates were issued on the spot. Over the period 1977–90, the fraction of registered sharecroppers rose from 23 to 65%.

We must be careful evaluating the direct effect of this registration scheme. During the same period of time in West Bengal, there was expansion in public and private irrigation and there was technological change as well, so we need to control for these variables. Banerjee, Gertler and Ghatak (2002) showed nonetheless, that Operation Barga accounted for a significant fraction of total growth in agricultural production during this period: 36% is the figure estimated.^{*a*}

It seems, then, that in the case of Operation Barga, the possible loss in yield due to lack of eviction threat as an instrument was far outweighed by the gain in yields accruing from a greater tenant stake in output. In the sample studied by Banerjee and Ghatak [1996], only 10% of all tenants had output shares that exceeded 50% in the pre-reform period. Post-reform, about half of all registered tenants and even a quarter of all *unregistered* tenants had shares that exceeded 50%.

Alas, many years later, the distinction between use rights and property rights, which worked well enough to give tenants more power, would come back to haunt the Left Front, and irrevocably change the face of politics in West Bengal. Land began to be acquired for non-agrarian manufacturing activity all over India. West Bengal was no option. Landlords, hamstrung by their inability to evict their sharecroppers, were only to eager to sell, while there was no obvious clause to protect or compensate the farmers, who were the tillers of the land, but mot the owners. Operation Barga simply did not have a contingency plan for this one. In the years leading up to the 2011 West Bengal Legislative Assembly election, the failures of equitable land acquisition brought the Trinamool Congress increasingly into prominence. In that year, a Trinamool-led alliance took 227 seats in the 294-seat Assembly, dealing a death blow to the incumbent Left Front government after more than three decades of unchallenged power.

^{*a*}The direct effect is probably even higher, because sharecropping accounted for somewhat less than half of West Bengal's agricultural sector.