

# Land II

11/12/2008

## Today's Agenda

1. Other roles for sharecropping (12.3.4)
2. Land Inequality & its Theoretical Implications (12.4.2)
3. Empirical Evidence(12.4.3)
4. Land Sales & Land Reform (12.4.4, 12.4.5)

Last time--

- We studied land rental markets and forms of tenancy—fixed-rent vs. sharecropping
- With no uncertainty, fixed-rent is efficient outcome
- However, what if tenant is risk-averse (and landlord is risk-neutral)?

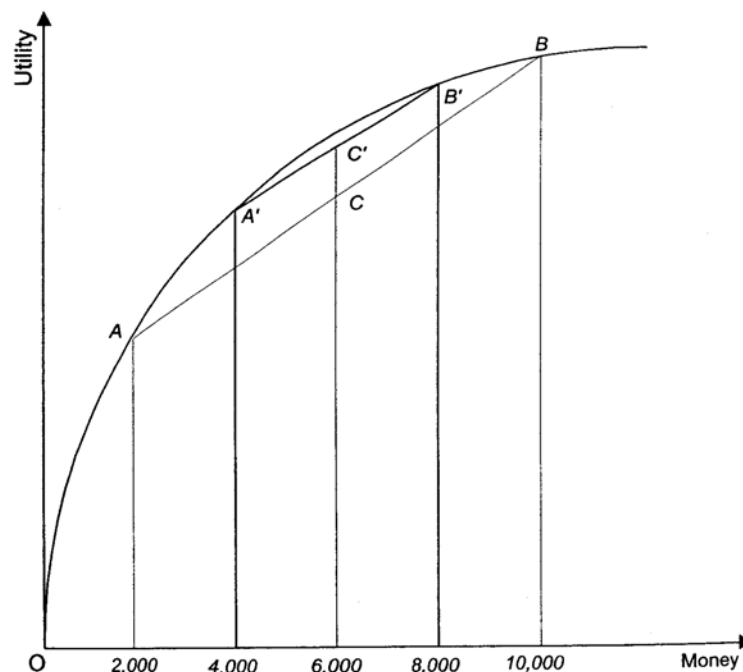


Figure 12.6. Comparison of two risky projects.

- Then sharecropping may be equilibrium outcome
- A third contractual form: wage labor
- Key concept: Distribution of risk vs. distribution of incentives

## 1. Other Roles for Sharecropping

### A. Double-incentives

- So far we assumed landlord is not involved with leased land other than collecting rent
- However what if organization structure requires landlord to be deeply involved with cultivation, methods and maintenance of land?
- (No risk) now consider incentives

**Fixed Rent**  
 Tenant works hard,  
 landlord does not

**Wage labor**  
 Landlord works hard,  
 tenant does not

Sharecropping

**Cost-sharing of inputs**

- Consider sharecropping (no risk)
- So far we assumed entire marginal cost if borne by tenant
- Say the only observable input is fertilizer instead of unobservable labor and landlord shares cost
- Now what is optimal amount of fertilizer

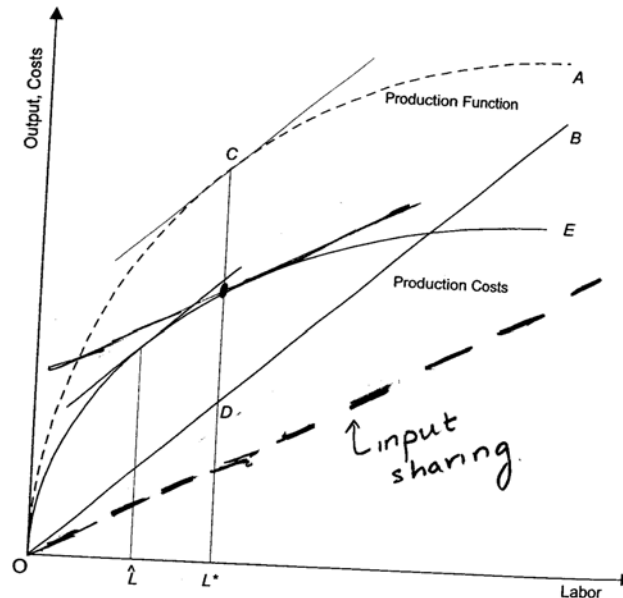


Figure 12.3. Sharecropping contracts and inefficiency.

**B. Limited Liability**

- Consider fixed-rent in risky environment with poor tenant
- What if tenant is just not able to pay fixed rent in bad state of the world because of no wealth?
- Creates incentive for tenant to overinvest in risky methods of production because landlord bears downside—limited liability
- One way to counterbalance this tendency: landlord lowers rent in bad states and raises it in good states
- Sharecropping has similar effect
- As tenant grows richer limited liability constraint grows less
- What does this imply about relationship between tenant wealth and forms of tenancy?

#### **D. Sharecropping as screening device**

- Suppose landlord wants high-quality tenant but is unsure about true ability and productivity
- Suppose landlord gives prospective tenant (who can be either high or low quality) choice between sharecropping and fixed-rent
- Who will choose what?
- Issues:
  - i. Abilities do not stay hidden forever,
  - ii. Does high-type have incentive to reveal himself?
  - iii. Competition for different types of tenants

## **2. Land Inequality and its Theoretical Implications**

- There is large (historically-determined and persistent) inequality in land distribution around the world
- Moral concerns aside, is inequality more productive?
- Productivity in sense of market efficiency: marginal product of inputs equals marginal cost
- Let's examine this question from several angles

### **A. Technology**

- Large plots suitable for mechanization and cultivation with capital-intensive measures
- What are the sources of economies of scale in production?
- Use of animals in production is economical only when certain minimum size of plot is reached because of thin rental market
- Capital goods—minimum size of land is higher than animals, but rental markets better
- Thus, technology favors larger plots of land
- But what if we could pool land? Will return to this.

### **B. Imperfect insurance market and small-farm productivity**

- Do small, self-cultivated farms and large, leased farms provide same incentives for efficient output?
- No, as we saw in previous discussion
- In a risky environment with imperfect insurance markets, landlords will offer contract with implicit insurance but this contract will fail to insure efficient in production
- Ownership of small, self-cultivated plots have intrinsic productivity advantage that cannot be mimicked by contracts

### **C. Imperfect labor markets and small-farm productivity**

- Previous argument relied on imperfect insurance markets
- Now say, labor markets are imperfect so there is unemployment
- Will small family farm or large employer have higher labor input?

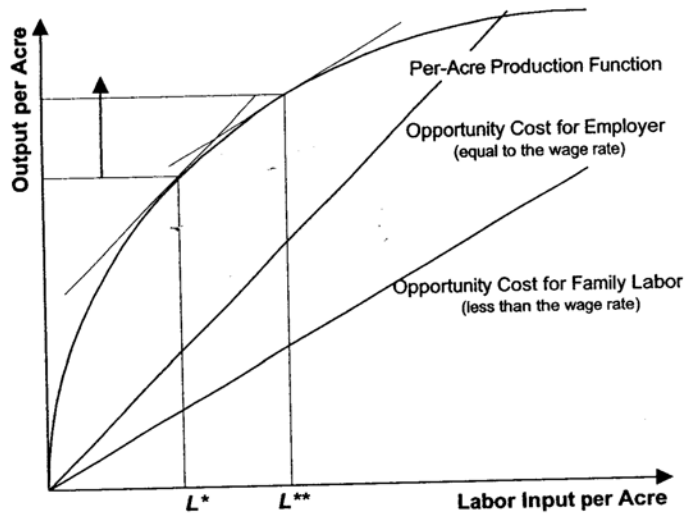


Figure 12.7. Imperfect labor markets and small-farm productivity.

- With a lower opportunity cost of labor due to possibility of unemployment, small farms using family labor will have larger output

#### D. Pooling land

- Can small farms replicate technological advantage of large-farms by pooling their land and taking advantage of technological returns to scale?
- Incentive problem; Joint production creates an externality—additional effort by any one farmer leads to additional output but additional output is shared among the whole team, labor will be undersupplied. “Free-rider” problem
- However, pooling resources may work in non-cultivation activities like mechanized processing or marketing
- Example: decollectivization in Chinese agricultural led to substantial gains in agricultural output: After collectivization in 1950s, productivity in Chinese agricultural fell by 20-30%. In 1970s. Just a few years after reforms (provided use rights on a plot), productivity was back up and continued to rise through 1980s.

### 5. Empirical Evidence

- We have seen that technology may favor large farms. On the other hand, in the presence of imperfect markets theory predicts small-farms are more productive.
- Two opposing forces—which one dominates?
- Available evidence from developing countries suggests productivity gains from incentives outweigh technological returns to scale

- Sample from West Bengal

Table 12.5. Rupees of output per acre by size group and tenure: West Bengal.

Operated area (acres)	Pure owners (Rs/acre)	Farms with some crop sharing		
		Overall productivity (Rs/acre)	Productivity on owned land (Rs/acre)	Productivity on sharecropped land (Rs/acre)
0-3	1313	798	867	604
3-5	1044	909	1099	709
5-8	960	842	1130	676
8-12	691	843 <sup>a</sup>	959 <sup>a</sup>	604 <sup>a</sup>
12+	624			
All	902	851	1047	658

Source: Sen [1981: Table 7].

<sup>a</sup>The last two size groups have been merged because of an insufficient number of observations.

- Aggregate evidence

Table 12.6. Farm size and land productivity: India.

Range of farm size (acres)	Average farm size (acres)	Income per acre (rupees)
0-5	3.0	737
5-15	9.3	607
15-25	19.5	482
25+	42.6	346

Source: Berry and Cline [1979, Table A-1].

Table 12.7. Farm size and land productivity: Selected regions.

Farm size	Northeast Brazil	Punjab, Pakistan	Muda, Malaysia
Small farm (hectares)	563 (10.0-49.9)	274 (5.1-10.1)	148 (0.7-1.0)
Largest farm (hectares)	100 (500+)	100 (20+)	100 (5.7-11.3)

Notes: Largest farm productivity is normalized to 100. "Small farm" refers to second smallest size range. Source: Berry and Cline [1979].

- So market imperfections do play a role. The greater imperfection in markets, smaller productivity differentials

## 4. Land Sale and Land Reform

- We see that more equal distribution of land may result in significant productivity gains

### A. Land Sales

- So do we see small landowners buying land from large landowners—does the land sale market work adequately?
- No. Most sales occur from poor to rich
- Why are land sale markets do thin?
- Assume credit markets imperfect

$$\text{Land Value (LV)} = \text{Discounted stream of profits from working land (P)} + \text{Collateral Value of Land (C)}$$

(Collateral value would be zero if there were perfect credit markets)

- For sale to occur  $LV_{\text{seller}} = LV_{\text{buyer}}$
- If buyer has enough money he will pay the value of land
- But what if he needs to take a loan to buy?
- Then he must mortgage that very piece of land. Land can no longer be used as collateral
- Now  $LV_{\text{seller}} > LV_{\text{buyer}}$
- No sale occurs

### B. Land Reform

- In order to achieve efficiency, government (or foreign donors) may step in to help small farmers obtain land
- Takes tremendous political will--- large landowners oppose. Times of political upheaval may provide opportunity for land reform
- Other pseudo-reform measures: land-use rights (India) or redistributing seized land as collectives (Mexico or Peru), land-ceilings
- Land reform in Korea

*Table 12.8. Land under different occupational groups in Korea, 1947 and 1964.*

Category	Share of land held (%)	
	1947	1964
Owner	16.5	71.6
Part owners	38.3	23.2
Tenants	42.1	5.2
Farm laborers	3.1	0

Source: Powelson and Stock [1987].

Next time: Chapter 13