Development Economics

Slides 14

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The Parallel Lives of Land and Labor Markets

Imagine an agricultural society with many residents.

- Production uses just two inputs: land and labor.
- Our arguments carry over to several inputs.
- Two distributions of endowments:
- Labor
- Land
- Typically, the latter is distributed far more unequally than the former.
- In the absence of any factor market, land will be cultivated with dramatically different labor-land ratios.

Taking Agriculture Seriously





Taking Agriculture Seriously



Land Inequality

Top 10% shares, most recent year available



Land Inequality

Bottom 50% shares, most recent year available



Labor markets:

Labor is hired in by landowners

Land markets:

- Land is leased in by laborers/tenants
- These are two sides of the same coin:
- Almost to the extent that it seems one side is redundant.
- But there are imperfections in both the land-lease and labor markets

A Remark on Land and Labor as a Parable

- Land and labor are two inputs located in different hands.
- They are brought together in a market.
- **Labor market** when the landowner makes all the decisions.
- **Tenancy market** when the laborer makes all the decisions.
- This is a parable, because it applies to other matching problems:
- Credit markets: "money" matching with "entrepreneurs."
- Venture capital market: "capital" meets "ideas" (complex contracts)
- Technology licensing: "patented knowledge" meets "capital."

An Imperfection in the Land-Lease Market

Yucheng leases his land to Hsueh-Ling

- Hsueh-Ling cultivates and pays rent to Yucheng.
- If the output is perfectly certain, Hsueh-Ling would make his own production choices and pay a fixed rent to Yucheng.
- Yucheng adjusts rent so that Hsueh-Ling's net return equals the return from his next-best alternative, or his opportunity cost.

But if the output is uncertain and Hsueh-Ling is risk-averse ...

- this creates an extra cost in addition to Hsueh-Ling's opportunity cost.
- Possibly because insurance markets are imperfect (it's all connected).
- \Rightarrow an imperfection or a **transaction cost** in the tenancy market.

An Imperfection in the Labor Market

Yucheng hires Hsueh-Ling instead.

- Now Hsueh-Ling gets a fixed wage, and there is no need for insurance.
- Youcheng adjusts this wage to deliver Hsueh-Ling's next-best alternative.
- All good?

Not really. Hsueh-Ling needs to put in the work.

- supervision costs:
 - supervisors need to be paid
- incentive payments:

extra premium will need to be paid.

 \Rightarrow an imperfection or a transaction cost in the labor market.

Which equilibrium structure leads to the smallest transaction costs?

- General idea for moral hazard:
- Outputs are sensitive to the efforts of many individuals.
- Let the person with "greatest sensitivity" be the residual claimant.
- Gets us closest to implementing the maximal social surplus.
- Adam Smith in The Wealth of Nations, Book III Ch 2, on sharecropping:

"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."

Land Lease and the Smith Doctrine

The British versus the French

- Fixed-rent versus sharecropping
- Tenant has land, puts effort of e to produce output Y at cost c(e)
- Landlord asks for *R*(*Y*): output-dependent rent.
- Fixed-rent tenancy: R(Y) = R.
- Sharecropping: $R(Y) = \sigma Y$, where $0 < \sigma < 1$.
- Which system is "superior"?

Social surplus =
$$\underbrace{[Y - c(e) - R(Y)]}_{\text{Tenant}} + \underbrace{[R(Y)]}_{\text{Landlord}}$$
.

Smith doctrine: Efficient contract maximizes the social surplus.

Land Lease and the Smith Doctrine

Social surplus =
$$[Y - c(e) - R] + R = Y - c(e) = F(e) - c(e)$$
.



Land Lease and the Smith Doctrine

How is this solution achieved?



Sharecropping distorts the social surplus:



Sharecropping distorts the social surplus:



Sharecropping distorts the social surplus:



Three important exceptions to the above argument:

1. Risk.

- Tenant often poor, and is more averse to risk.
- Fixing e, say that output is h (prob. p) and ℓ (prob. 1 p).
- Fixed rent R: tenant keeps h R (prob. p) and ℓR (prob. 1 p).
- Sharecropping σ : tenant keeps $(1 \sigma)h$ (prob. p) and $(1 \sigma)\ell$ (prob. 1 p).
- Compare two such methods generating same average:

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





Fixed-rent tenancy is inefficient at sharing risk.

Three important exceptions to the above argument:

2. Limited Liability.

- Again, we need uncertain output for this argument.
- What if for some realizations Y, Y R is below tenant subsistence?
- And what if the tenants have no assets to pay off that difference?
- Then effort will be undersupplied **just as in the debt overhang model**.
- In fact, pause here to appreciate some of the connections:
- Output is a function of effort
- Fixed rent is like charging a fixed rate of interest
- Sharecropping is like lending with equity sharing
- Some of the lessons here can be taken back to that context.

Three important exceptions to the above argument:

- 3. Double Moral Hazard
- In some cases, **the landlord may also need to put in effort** on the land.
- Label the landlord by 1 and the tenant by 2.
- Landlord payoff: $F(e_1, e_2) c_1(e_1)$
- Tenant payoff: $F(e_1, e_2) c_2(e_2)$
- Incentives need to be provided on both sides.
- Fixed rent does not do that.
- Sharecropping may be a good compromise solution

Lesson:

- Some degree of "reward compression" is needed
- Either to share risk, or because
- There is limited liability, or because
- There is double moral hazard
- These go **beyond the credit market model** studied earlier.

Tenancy With Cost-Sharing



Idea: Choose σ so that $(1 - \sigma)[F(e^*) - c(e^*)]$ = tenant's best alternative.

Tenant will willingly implement the first-order condition for social surplus maximization: F'(e) = c'(e).

- Why doesn't cost sharing take care of both risk-aversion and incentives?
- Answer: All costs may not be observable.
- So the landlord cannot stipulate tenant effort.
- That said, some cost-sharing can alleviate the moral hazard problem.
- That is, *e* could be a vector of inputs, only one of which is unobserved.
- Connection to interlinked contracts at the end of Slides 14.