

Land II

Esther Duflo

14.74

April 13, 2011

Tenancy Relations in Agriculture

- We continue our discussion of Banerjee, Gertler and Ghatak (2003)
- A risk-neutral tenant (the 'agent') works for a risk-neutral landlord (the 'principal').
- The amount of crop output (H or 0) depends critically on the amount of effort e put in by the tenant
- The key problem is that the landlord can't observe effort e .
- So what contract will the landlord offer the tenant? It depends. We saw:
 - The 'first-best' contract—the benchmark that would obtain if the landlord *could* observe effort
 - The contract that would obtain in the absence of the tenant's limited liability constraint
 - The contract that would obtain when there is an LLC

The Role of the Outside Option

- Remember that the tenant can choose to work somewhere else and will receive utility \underline{w} from doing so. How does this modify the contract chosen earlier (in the limited liability case)?
- Tenant's utility under the contract:

$$\begin{aligned} & \frac{h}{c}h - \frac{1}{2}c\left(\frac{h}{c}\right)^2 \\ = & \frac{1}{2}\frac{h^2}{c} = \frac{1}{8}\frac{H^2}{c} \end{aligned}$$

- If $\frac{1}{8}\frac{H^2}{c} \geq \underline{w}$, they can choose this contract. What is surprising about this contract?
- if $\frac{1}{8}\frac{H^2}{c} < \underline{w}$, they have to pick a contract which will give at least \underline{w} to the tenant Pick h such that:

$$\frac{1}{2}\frac{h^2}{c} = \underline{w}$$

Outside option

- The solution to this problem:
 - $h =$
 - $e =$
- e is always an increasing function of \underline{w}
- output is always an increasing function of \underline{w}
→ increasing the tenant's outside option increases productivity

Other Sources of Inefficiency

- ① The rental contract makes the farmer bear all the risk of production.
 - If he is risk averse he may dislike that and want some insurance from the landlord.
 - This would imply a contract where he will need to pay less during bad times than during good times.
- ② The rental contract provides no incentives for the land
 - There may be things the landowner needs to do
 - eg, management-type things

The Desirability of Land Reform

- 1 If limited liability is important, then redistributing wealth clearly will help.
 - If the farmer is wealthier, it improves the ability likelihood that a fixed rent contract will work.
 - But why redistribute land in particular?
- 2 If risk aversion is important, then redistributing land may or may not have an effect on productivity, depending on why people have different levels of risk aversion:
 - 1 Suppose that differences in risk aversion are exogenous: then what will happen after the land reform?
 - 2 Suppose that risk aversion is bigger for those who don't have much land. How does this change the argument?
- 3 If there are incentive problems on both sides, what will happen after the land reform?

The Case for Redistributing Land II

- Why redistribute land rather than money? As economists, we tend to think that money is better, since with money, the poor could buy land if they wanted to. So why land reform?

The Case for Redistributing Land I

The giving end: Getting land from the rural rich.

- Common argument (1): land cannot flee to Switzerland, and cannot be hidden. Easy to seize.
 - Yet: Land titles are very sketchy. Formal titles can be quite different from effective control, especially if people have an incentive to do so. Land may not be so easy to take away after all.
- Common argument (2): redistributing land does not create distortions, since it is a fixed asset (income taxation would reduce labor supply, but land does not).
 - Yet: Redistributing land is difficult: it is opposed by landowners who often control important political resources. There are very few instances of large scale land redistribution that did not take place in the midst of massive social upheaval. Land reform may be politically very costly.

The Case for Redistributing Land III

The giving end: Getting land from the rural rich.

- Makes them more likely to migrate to the cities. But are cities really too large?
- Land is an asset: Intrahousehold allocation issues. Perhaps money would be spent by the household head in alcohol etc... whether land will remain in the household. We should make it hard to sell the land then! This may be the most compelling argument in favor of land reform.

Does Land Reform Work?

Banerjee-Gertler-Ghatak (2002)

- Banerjee, Gertler, Ghatak study a *tenancy reform* = improvement in the rights of tenants. It differs from a traditional land reform (redistribution of land). Land is not redistributed. The tenant is offered the *security of tenure* = if he registers, he cannot be evicted by the landlord, as long as he pays 25% of the output to the landlord
- Consequences of the reform on the tenant
 - 1 Bargaining power effect
 - Tenant and landlord negotiate on the share
 - Before, what would happen to the tenant if he disagreed with the landlord?
 - After, what can happen to him?
 - What are the consequences of this on the share of the tenant?
 - Is it good or bad for productivity?

2 Security of tenure effect

- What positive effect does it have on productivity?
- What negative effect does it have on productivity?
- The expected effects of the reform
 - ① Reform → bargaining power → improvement in share → improvement in productivity
 - ② Reform → security of tenure → improvement in productivity (?)

Empirical analysis of the reform

- Left front government came to power in 1977
- Started registration camps in villages (officials came to help tenants register)
- Faced some difficulties = flood, landlords' opposition
→ registration progressed more slowly than expected and was still continuing in early 1990s.
- Study use difference in difference.

Results

- Security and share of output
 - From a retrospective survey: 80% said that landlord used eviction threats in the pre-reform period and 30% claimed that they (or their fathers) were actually threatened. 96% said it was difficult or impossible to evict now.
 - share of tenants getting more than 50% of output went up from 17% to 39%.

Results: Bangladesh vs West Bengal

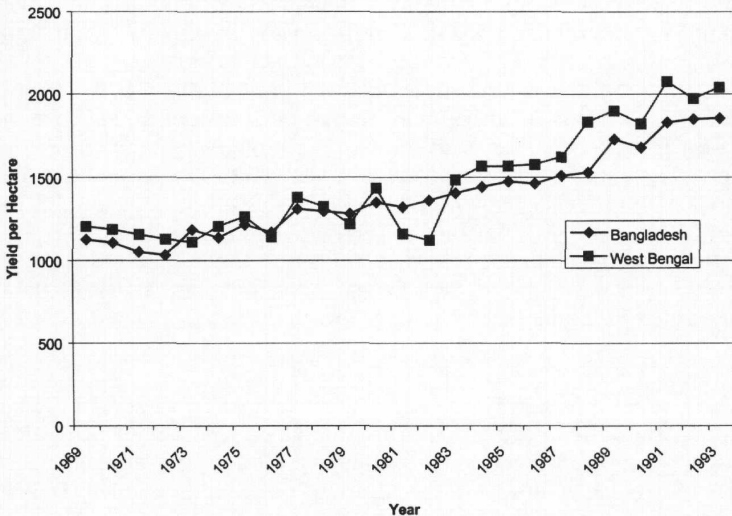


FIG. 4.—Rice yield in West Bengal and Bangladesh, 1969–93

Results: Bangladesh vs West Bengal

TABLE 4
DIFFERENCE-IN-DIFFERENCE MODELS OF OTHER PUBLIC POLICIES (1977-91)

	Log(Public Irrigation)		HYV SHARE	
	Whole Sample	Excluding 1981-82	Whole Sample	Excluding 1981-82
West Bengal × (1979-83)	-.24** (-2.28)	-.18 (-1.61)	-.03** (-2.25)	-.022 (-1.45)
West Bengal × (1984-87)	-.27*** (-2.44)	-.24** (-2.18)	-.014* (-1.88)	-.029** (-1.95)
West Bengal × (1988-91)	-.57*** (-4.97)	-.53*** (-4.69)	-.083*** (-5.25)	-.085*** (-5.58)
Log(rainfall)	.06 (.82)	.005 (.06)	.006 (.56)	.007 (.67)
District fixed effects <i>F</i> statistic	250.66***	227.98***	55.32***	49.21***
Year fixed ef- fects <i>F</i> statistic	8.68***	9.51***	29.65***	31.22***
<i>R</i> ²	.96	.96	.85	.85
Sample size	424	367	424	367

NOTE. — *t*-statistics are in parentheses.

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

Productivity: Within West Bengal

- Districts had different registration rates at different times. At any given point, was productivity higher in the districts which had more registered tenants?

$$y_{dt} = \alpha_d + \lambda_t + \beta b_{dt} + \gamma X_{dt} + \epsilon_{dt}$$

b_{dt} = number of registered tenants

X_{dt} = other district-time varying variables

γ = effect of other district-time varying variables on productivity

- Results: higher registration is associated with faster growth in yield.

Results: Within West Bengal

TABLE 5
EFFECT OF REGISTRATION ON THE LOG OF RICE YIELD IN WEST BENGAL, 1979-93
(N=210)

	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 4 (4)	Model 5 (5)	Model 6 (6)
Sharecropper registration (one year lagged)	.43*** (3.46)	.42*** (3.44)	.43*** (3.55)	.35*** (2.69)	.36*** (2.64)	.36*** (2.63)
Log(rainfall)	...	-.07* (-1.67)	-.08* (-1.82)	-.07 (-1.59)	-.08* (-1.74)	-.08* (-1.77)
Log(public irrigation)	...	.02 (1.01)	.01 (.70)	.01 (.60)	.02 (.83)	.02 (.79)
Log(roads)	...	.28*** (2.75)	.25** (2.46)	.21** (1.99)	.19 (1.55)	.22 (1.54)
HYV share of rice area	...	...	.57*** (2.85)	.45** (2.10)	.47** (2.16)	.47** (2.16)
<i>F</i> -statistic:						
South × year ^a	...	...	...	4.73***	4.36***	4.38***
Left Front × year ^b	...	...	...	...	2.64**	2.65**
Sharecropping × year ^c	...	...	...	...	2.64**	.12
District fixed effects	72.23***	15.10***	8.99***	9.01***	8.47***	7.68***
Year fixed effects	28.31***	27.67***	21.60***	17.63***	17.83***	12.17***
R ²	.91	.92	.92	.92	.92	.92

NOTE. — *t*-statistics are in parentheses.

^a Represents a set of variables obtained by interacting a dummy variable that takes the value one if that district is in southern West Bengal with each year.

^b Represents a set of variables obtained by interacting a dummy variable that takes the value one if that district had a Left Front majority at the local-level government in 1977 with each year.

^c Represents a set of variables obtained by interacting the initial extent of sharecropping in a district with each year.