Rural Labour Markets

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Example: Labour Markets in the ICRISAT Villages

- Mahbubnagar and Akola in Maharastra
  - hired labour constitutes 60–80% of total

- Casual labour:
  - hired on a day–to–day basis
  - high turnover rates
  - high rates of unemployment (esp. off season)
  - some paid on a piece rate basis (harvesting)
  - others with daily wages
Permanent Labour: “regular farm servant”

- contractual period: 3 to 12 months (often renewed)
- verbal contracts
- hired by wealthier landed households
- earn higher wages than casual labourers
- increasing contract violation since 1980s
No distinction between casual and long–term labour
No distinction between numbers of workers and labour power (nutrition)
Assumes away problems of asymmetric information
No involuntary unemployment
Ignores uncertainty
Energy Use

- Resting Metabolism
  - body temperature, heart, respiratory action
  - minimum energy for resting tissues and cell membranes
  - FAO estimate: 65 kg male requires 1700 kcal per day for this

- Energy required for work
  - depends on type and intensity of work
Energy Balance

- Energy Input
  - determined by food which is in turn determined by labour supply and non-labour income (e.g. land)

- Storage and Borrowing
  - in short run:

      energy deficit = energy use − energy input

- Met by running down stores in human body
  - sustained deficit leads to undernutrition, illness and, ultimately, death
The Nutritional Efficiency–Wage Model

- **The capacity curve**
  - at low incomes most nutrition used to maintaining resting metabolism
  - little extra energy left over for work
  - once critical nutrition level achieved, work capacity increases rapidly
  - eventually diminishing returns to nutrition due to natural limits
Figure: Work Capacity Curve
• Piece Rates

Assume income received on the basis of tasks completed:

\[ \text{Piece Rate} = \frac{\text{Income}}{\text{Work Output}} \]

Figure: Piece Rate
Labour Supply

- how does capacity supplied vary with income?
- assume worker maximizes her income

Figure: Determination of Labour Supply
Figure: Labour Supply Curve
Figure: Equilibrium
Implications

- **Involuntary unemployment**
  - employers will not reduce piece rate below $v^*$ despite unemployment, because this will reduce work capacity

- **Viscous cycle**
  - lack of job opportunities
  - low income
  - low nutrition
  - low capacity to work
  - less access to labour markets
Dynamics of Nutritional Status

- low wages paid today
  ⇒ low nutritional status in the future
  ⇒ reduced productivity

- if probability of hiring same worker again is low
  ⇒ employers do not take full account of impact of wage on nutritional status
Example

- Worker’s “reservation” wage = $5

- Minimum wage to maintain nutritional status = $7

- Current value of work effort = $10

- If $w < $7 nutritional status deteriorates $\Rightarrow$ productivity falls to $7

- Two employers: E1 and E2

- Random matching of workers with employers $\Rightarrow$ probability or re–hiring a worker = 1/2
Should each employer pay $5 or $7?

- Payoffs to $E_1$:

<table>
<thead>
<tr>
<th>Wage</th>
<th>Profit Today</th>
<th>Profit Tomorrow</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>$w = 7$</td>
<td>10 − 7</td>
<td>[ \begin{cases} 10 - 5 &amp; \text{if } E_2 \text{ pays } $7 \ \frac{10}{2} + \frac{7}{2} - 5 &amp; \text{if } E_2 \text{ pays } $5 \end{cases} ]</td>
<td>8</td>
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<tr>
<td>$w = 5$</td>
<td>10 − 5</td>
<td>[ \begin{cases} \frac{10}{2} + \frac{7}{2} - 5 &amp; \text{if } E_2 \text{ pays } $7 \ 7 - 5 &amp; \text{if } E_2 \text{ pays } $5 \end{cases} ]</td>
<td>8.5</td>
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- Payoff matrix:
• Nash equilibrium: both employers pay $5

• Superior outcome (both for wages and profits) is to pay $7

→ BUT each employer will deviate if he thinks the other is paying $7

→ “Prisoner’s dilemma”

• if situation is repeated over time

← continuous degradation of nutritional status
Permanent Labour Markets

- Also referred to as “tied” or “attached” labour

- Two main theories of why permanent labour markets arise:
  
  (1) to provide incentives for workers performing specialized tasks that are difficult to monitor

  (2) as a substitute for casual labour markets where there is risk and imperfect credit markets
To Induce Effort on Non–Contractible Tasks

- Employer induces effort by paying a high wage and threatening to end contract if the worker “shirks”

- **Example:**
  - \( w_c \) = wage in casual labour market
  - \( w_p \) = permanent wage
  - \( L_c \) = casual labour force
  - \( L_p \) = permanent labour force
  - \( e \) = work effort required of permanent labour
  - \( N \) = mental planning horizon
• Payoff to not shirking:

\[ wp - e + N(wp - e) \]

• Payoff to shirking:

\[ wp + Nwc \]

• To induce effort employer must set the permanent wage so that

\[ (N + 1)(wp - e) \geq wp + Nwc \]

\[ \iff \text{which implies} \]

\[ wp = wc + \left( \frac{N + 1}{N} \right) e. \]

\[ \iff \text{last term is a “bribe” not to shirk} \]

• Relative wage

\[ \frac{wp}{wc} = 1 + \left( \frac{N + 1}{N} \right) \frac{e}{wc}. \]
Implications of Growth

- Demands for both types of worker rise, pushing up $w_p$ and $w_c$.
  - $\frac{w_p}{w_c}$ falls
  - $\frac{L_p}{L_c}$ increases

- Consistent with some empirical studies on agricultural booms

- But inconsistent with long term trend
Tied Labour and Seasonal Fluctuations

- If workers are more risk-averse than employers, they may accept a lower average wage in return for transferring the income fluctuations to the employer.

- Why do permanent labour contracts become less prominent as economy develops:
  - Decline in seasonality
  - Greater access to credit
  - Greater opportunities (e.g. manufacturing) may reduce enforceability
Figure: Fluctuation aversion

Utility

Income

\( u(150) \)
\( u(130) \)
Intermediate Societies

- General problem of “unbalanced” economic development:
  - increased mobility, wealth and change in some sectors
  - reduction in long–term, informal contracts based on trust and reciprocity.
  - once economy is sufficiently wealthy, can be replaced with formal contracts supported by more advanced information and legal systems

- BUT there may be a phase in which it becomes an intermediate society
  - growth in advanced sectors undermines traditional institutions