Rural Labour Markets

Fall 2010

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)

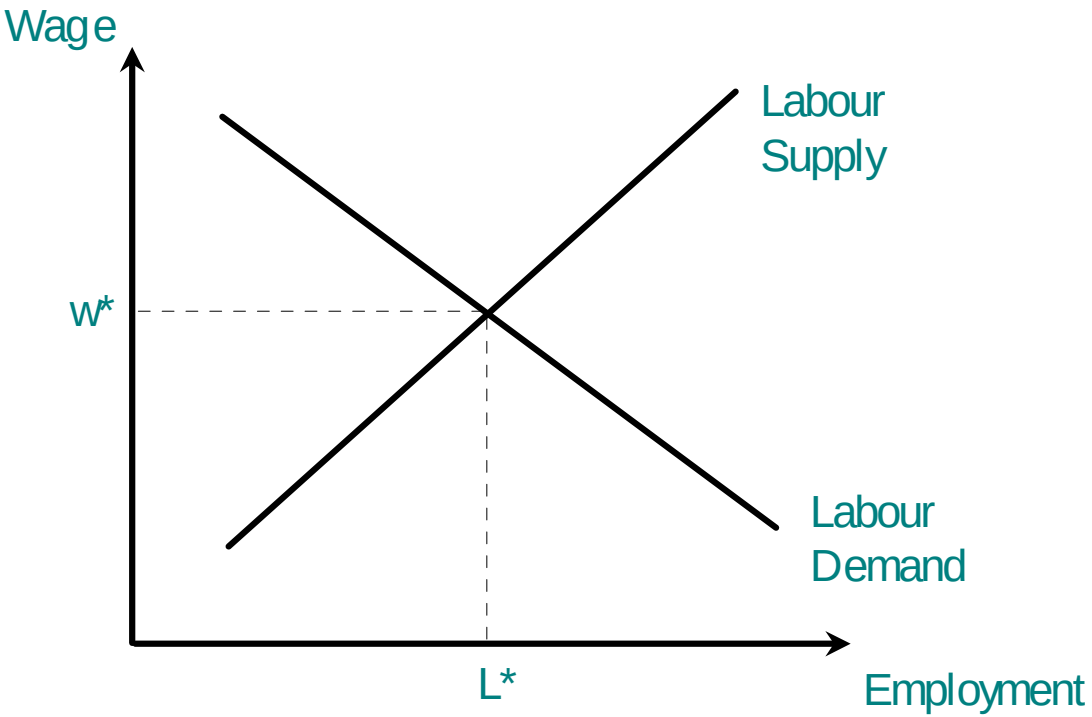
↪ verbal contracts

↪ hired by wealthier landed households

↪ earn higher wages than casual labourers

↪ increasing contract violation since 1980s

The Neoclassical Labour Market



- 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

Poverty, Nutrition and Labour Markets

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:

$$\text{energy deficit} = \text{energy use} - \text{energy input}$$

- 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

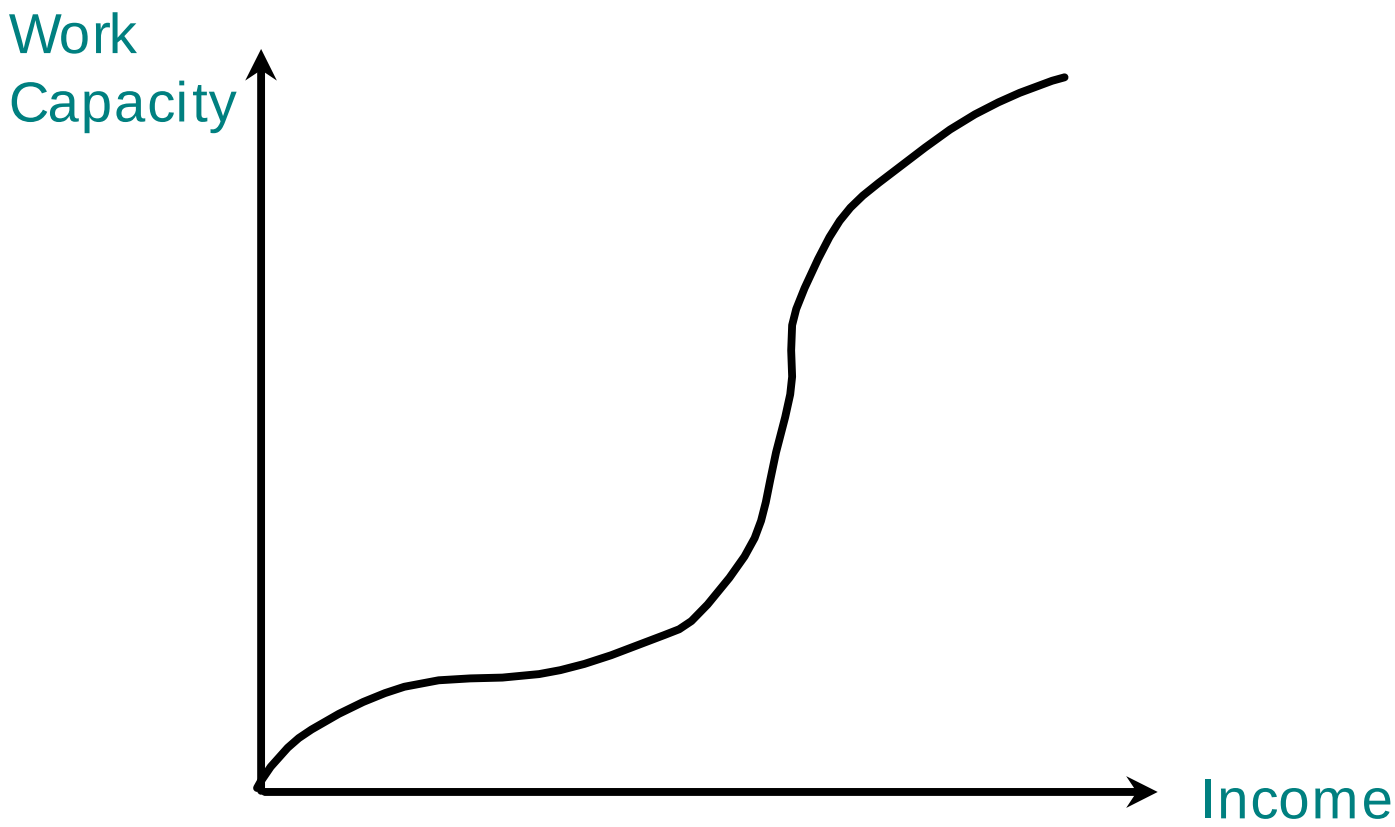


Figure: Work Capacity Curve

- **Piece Rates**

↪ assume income received on the basis of tasks completed:

$$\text{Piece Rate} = \frac{\text{Income}}{\text{Work Output}}$$

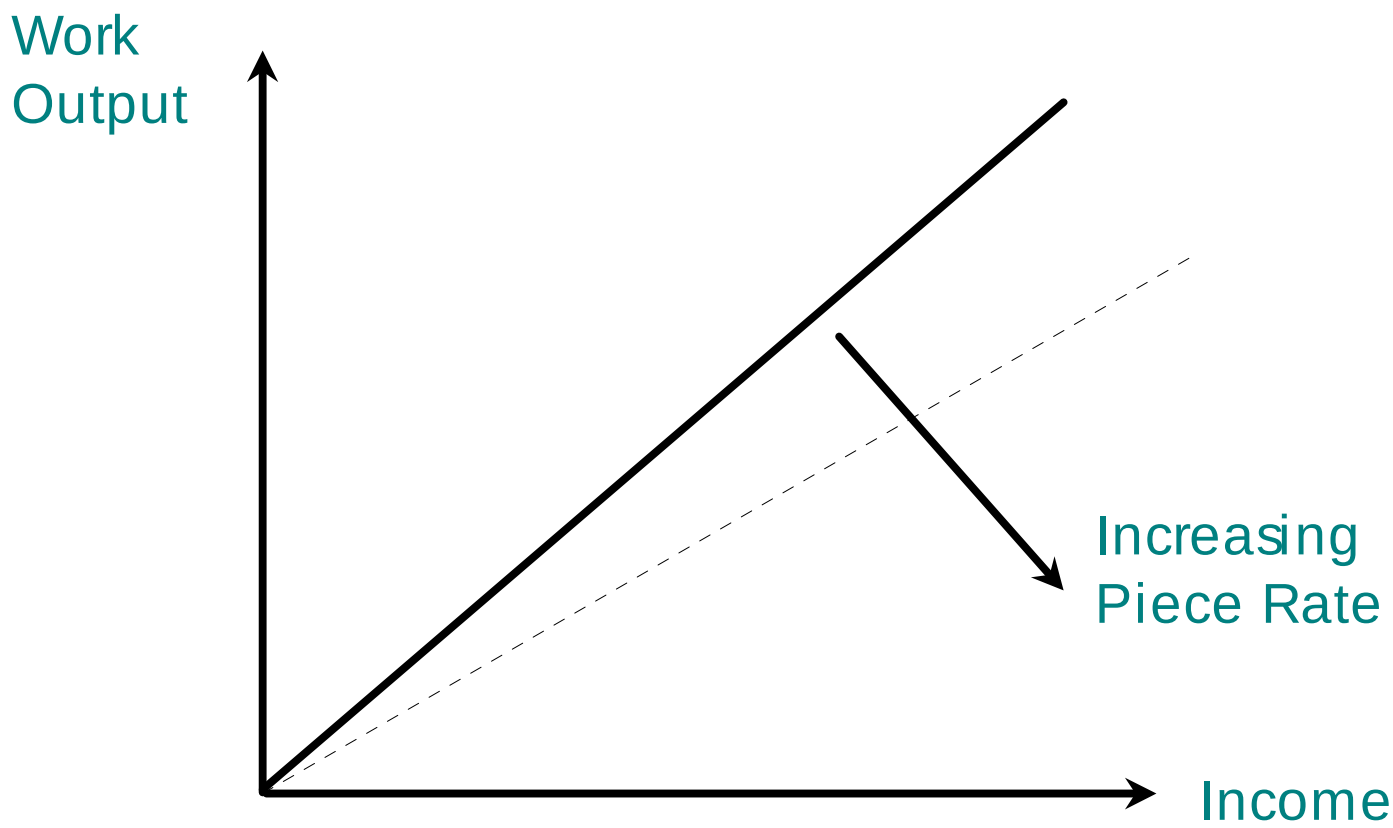


Figure: Piece Rate

- **Labour Supply**

↪ how does capacity supplied vary with income ?

↪ assume worker maximizes her income

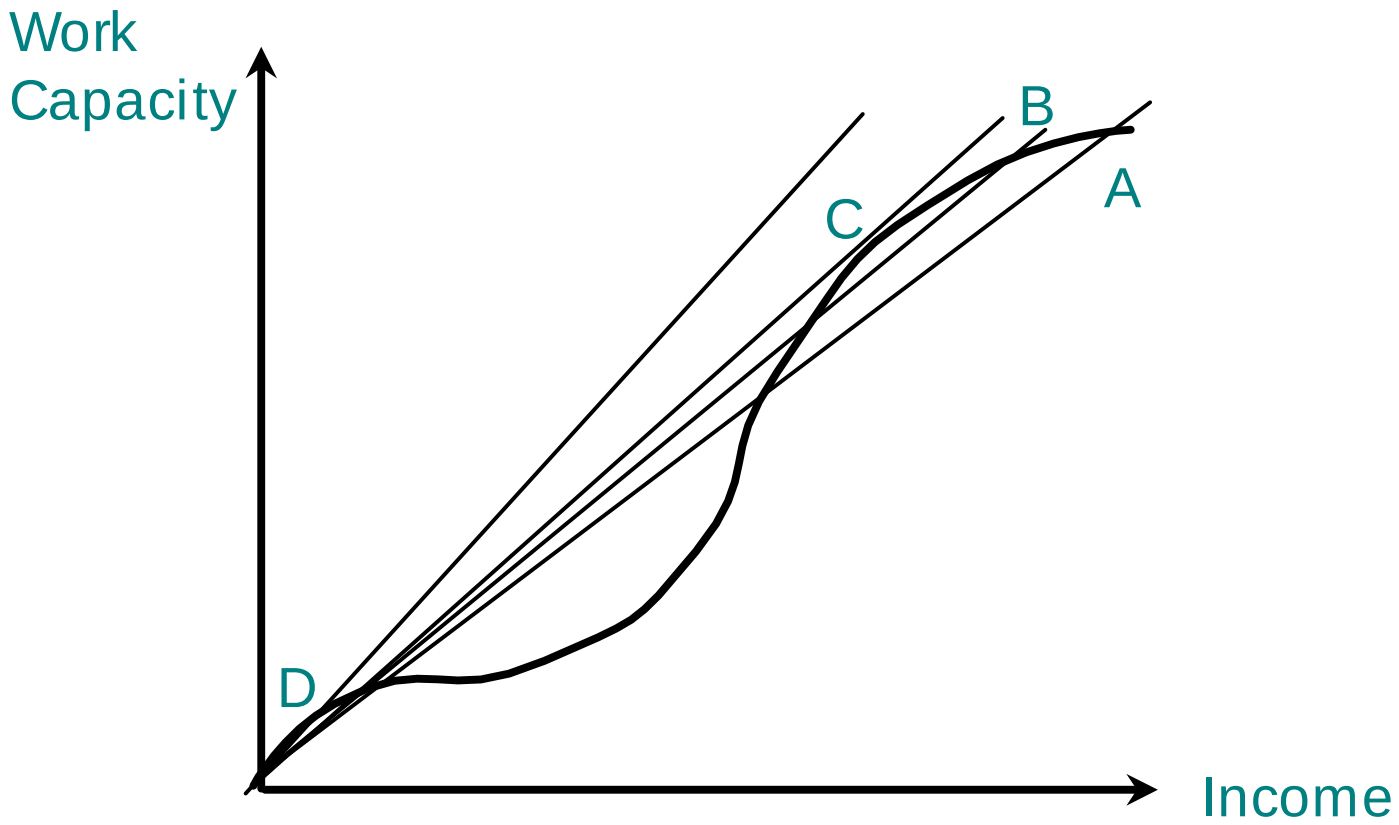


Figure: Determination of Labour Supply

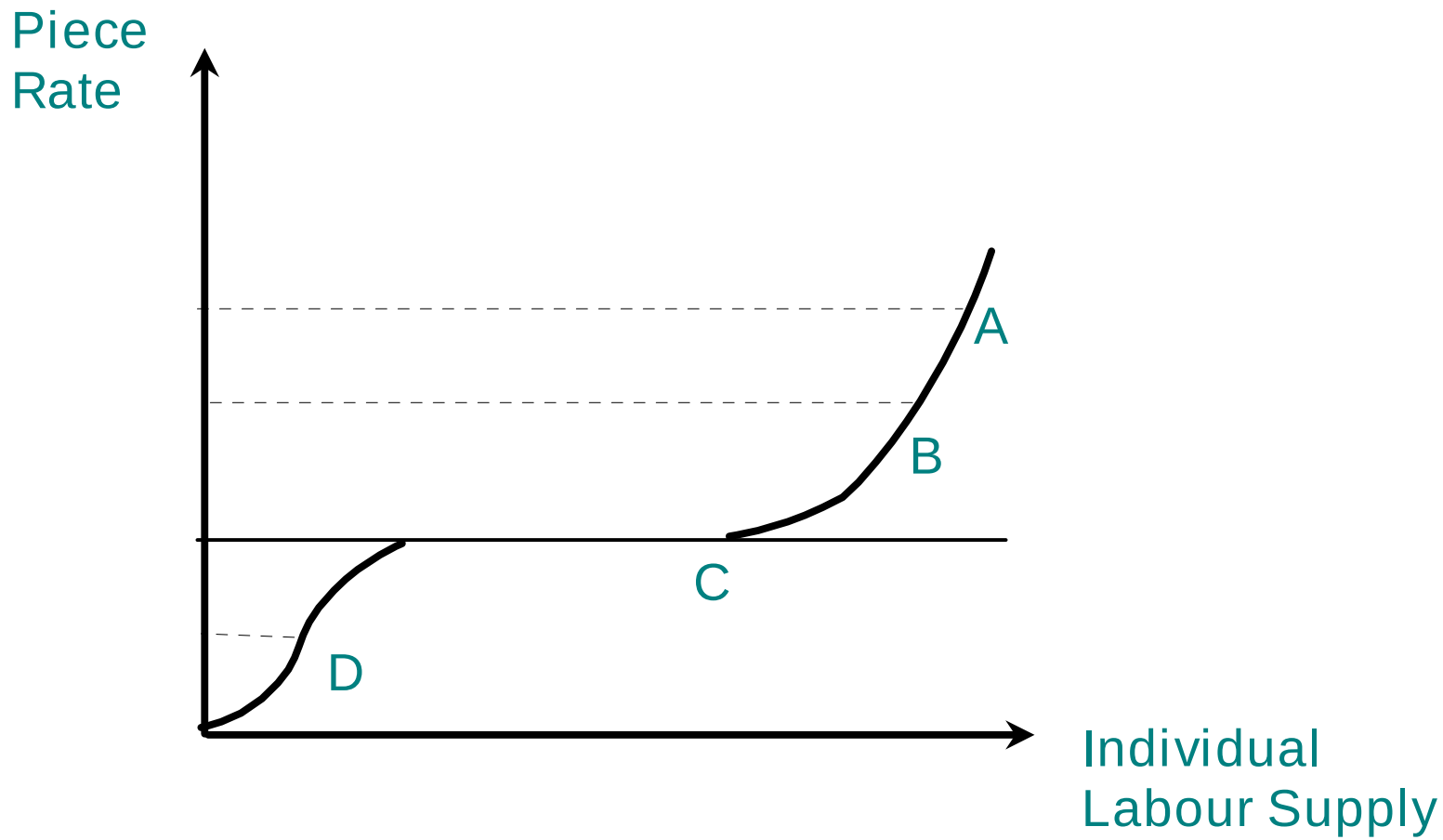


Figure: Labour Supply Curve

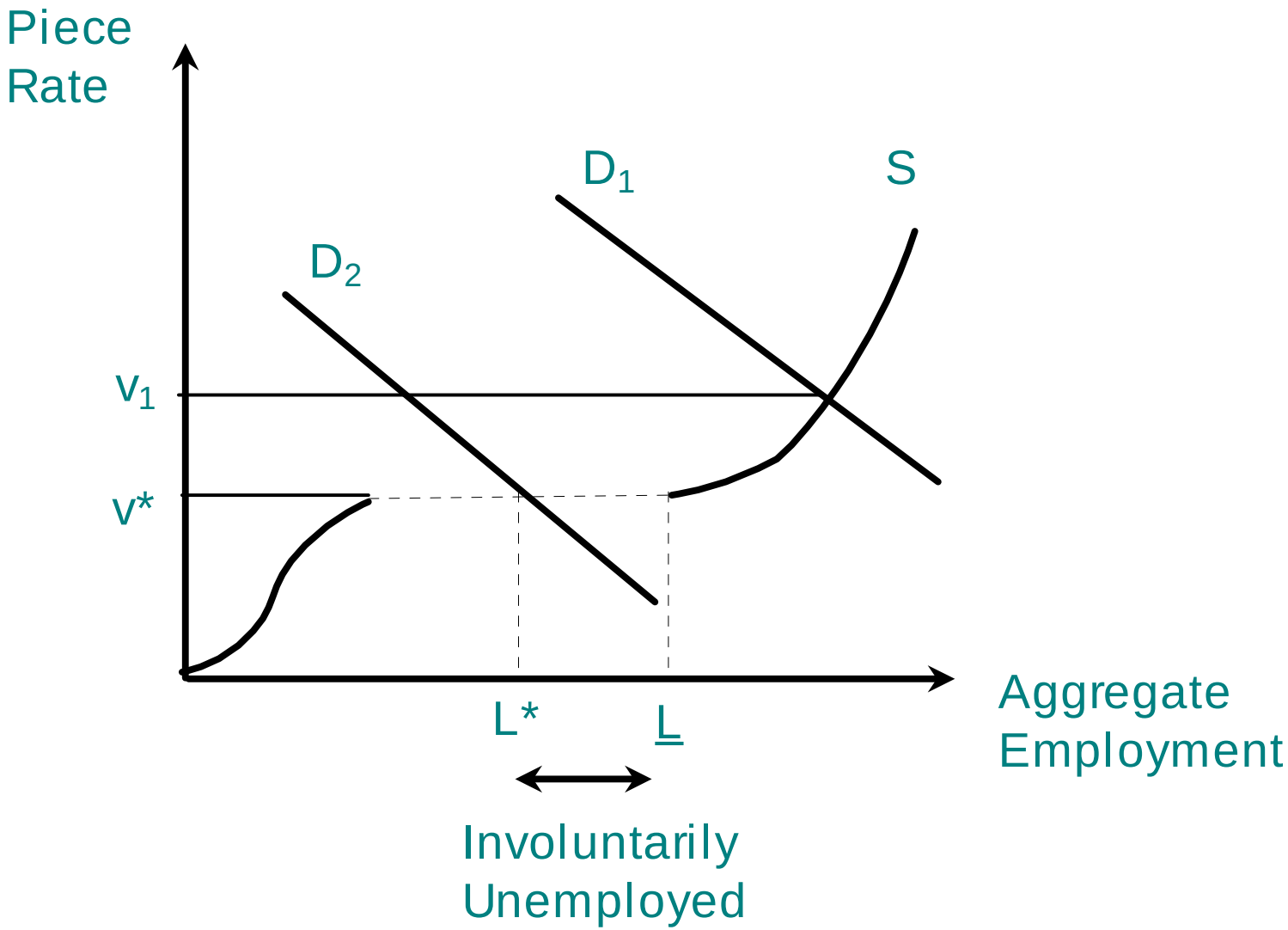


Figure: Equilibrium

Implications

- **Involuntry unemployment**

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

- **Viscious 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

$\Rightarrow$ low nutritional status in the future

$\Rightarrow$ reduced productivity

- if probability of hiring same worker again is low

$\Rightarrow$ 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 $E1$:

Wage	Profit Today	Profit Tomorrow	Total
$w = 7$	$10 - 7$	$\begin{cases} 10 - 5 & \text{if E2 pays \$7} \\ \frac{10}{2} + \frac{7}{2} - 5 & \text{if E2 pays \$5} \end{cases}$	$\begin{matrix} 8 \\ 6.5 \end{matrix}$
$w = 5$	$10 - 5$	$\begin{cases} \frac{10}{2} + \frac{7}{2} - 5 & \text{if E2 pays \$7} \\ 7 - 5 & \text{if E2 pays \$5} \end{cases}$	$\begin{matrix} 8.5 \\ 7 \end{matrix}$

- Payoff matrix:

		E2 $w = 7$	E2 $w = 5$
E1	$w = 7$	8, 8	6.5, 8.5
	$w = 5$	8.5, 6.5	7, 7

- 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:

$$w_p - e + N(w_p - e)$$

- Payoff to shirking:

$$w_p + Nw_c$$

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

$$(N+1)(w_p - e) \geq w_p + Nw_c$$

↪ which implies

$$w_p = w_c + \left(\frac{N+1}{N}\right) e.$$

↪ last term is a "bribe" not to shirk

- Relative wage

$$\frac{w_p}{w_c} = 1 + \left(\frac{N+1}{N}\right) \frac{e}{w_c}.$$

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. manfacturing) may reduce **enforceability**

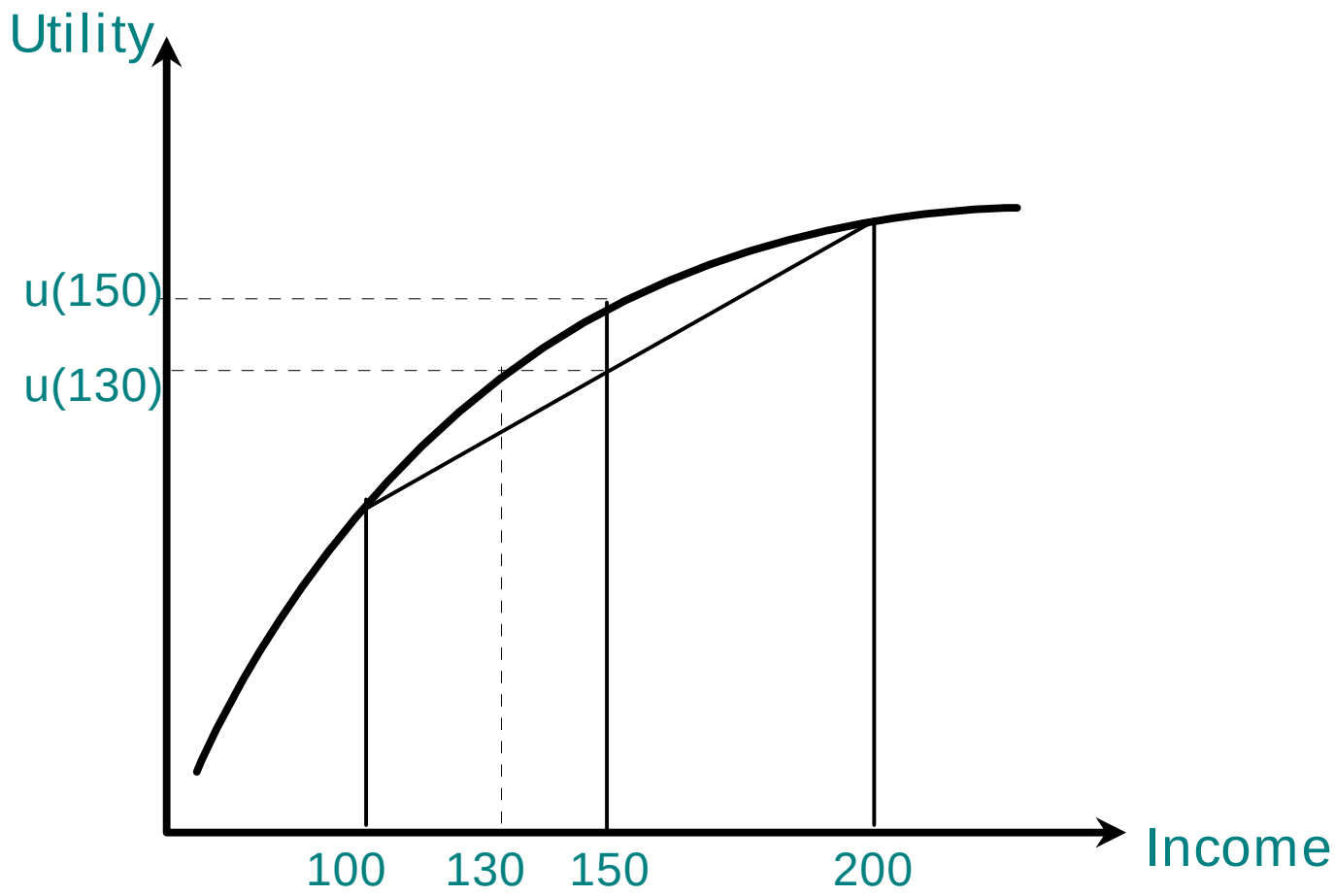


Figure: Fluctuation aversion

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