

# Development Economics

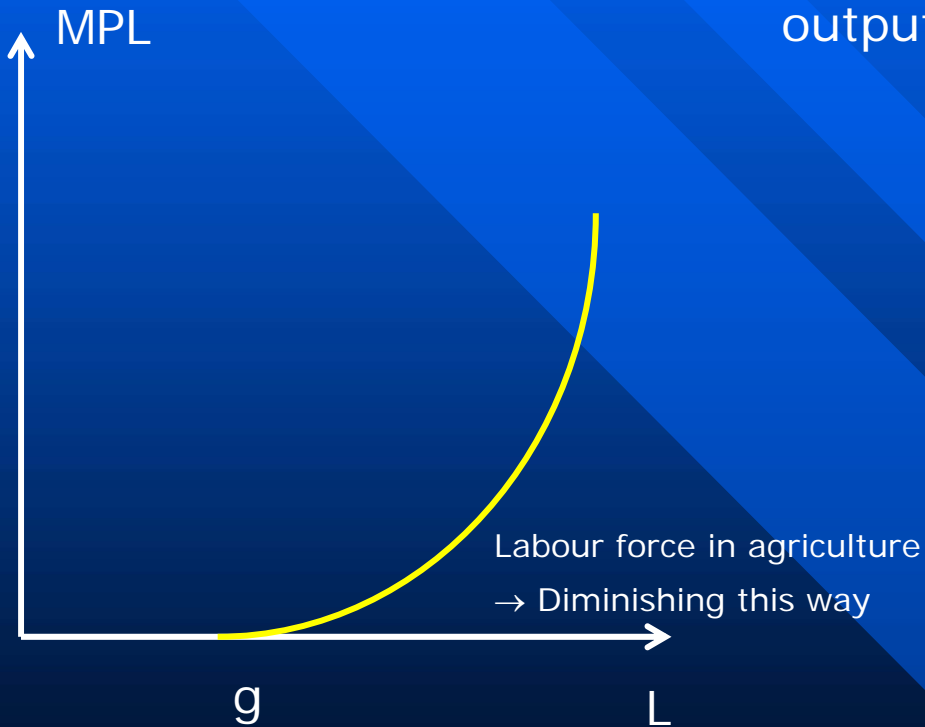
Development Microeconomics

(by) Bardhan and Udry

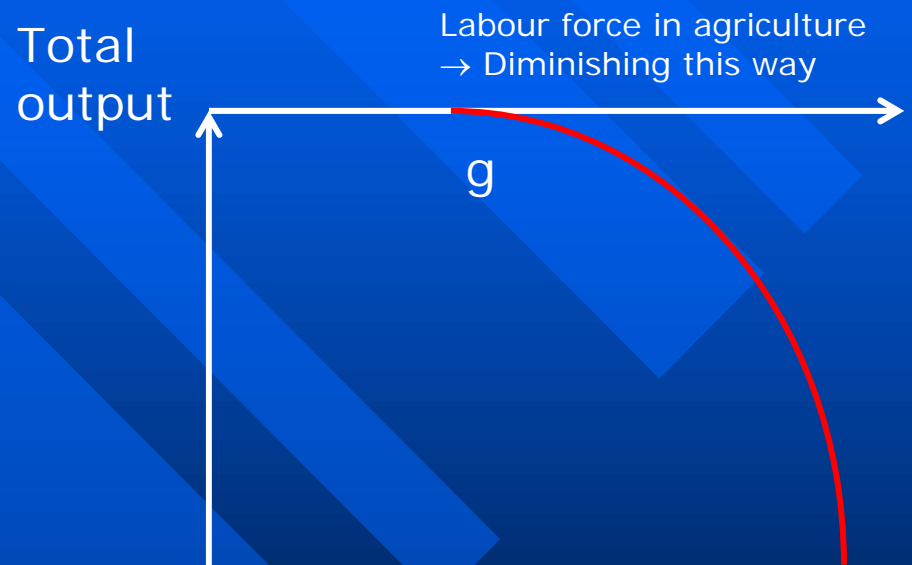
Chapter 4

# Marginal product of labour vs. total output

■ Marginal product of labour



■ Total output



# Lewis-Fei-Ranis model [1]

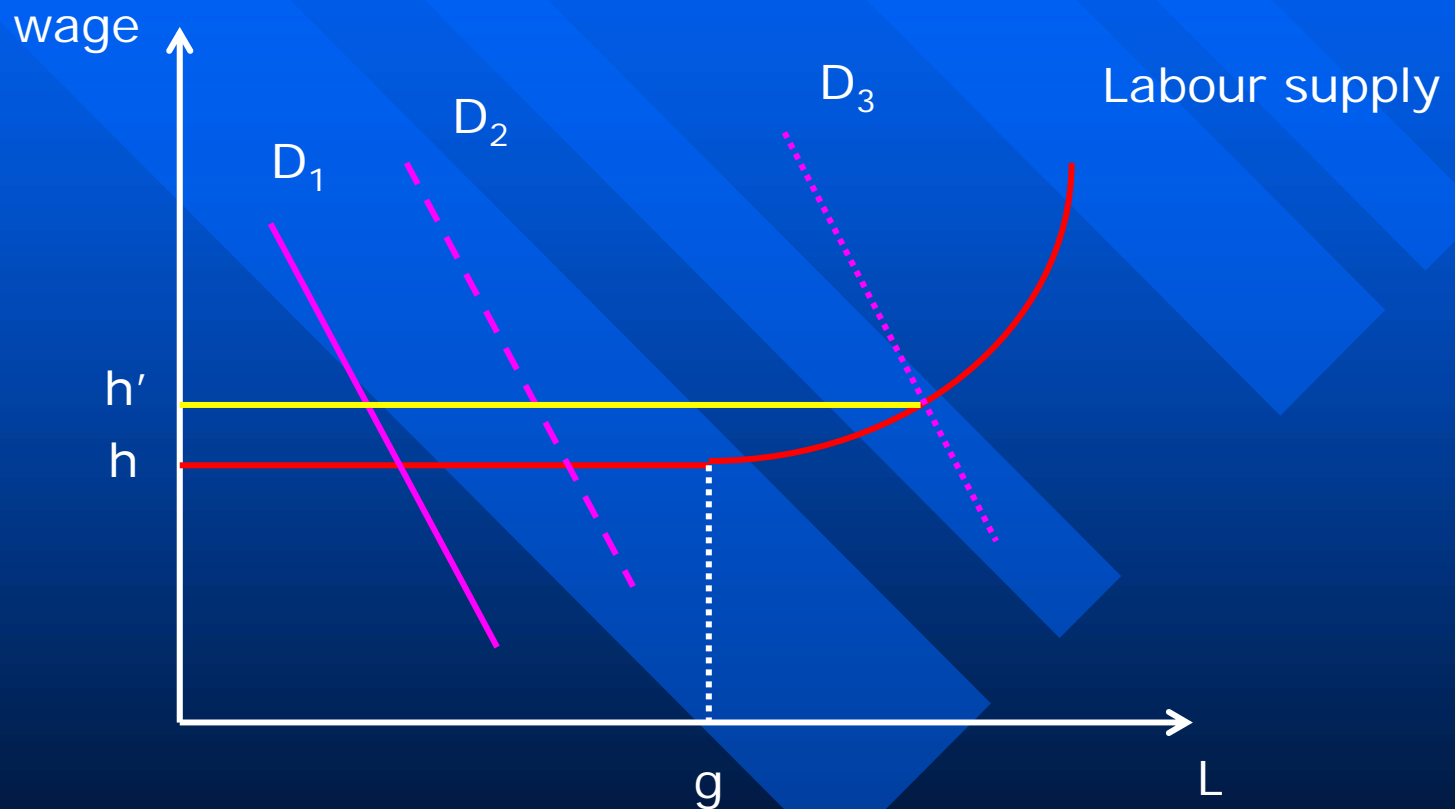
## ■ Assumption.

- There are surplus labourers in the agricultural sector whose marginal productivity is zero.

## ■ Implication.

- These labourers can be shifted to the industrial sector.
  - » No change in agricultural output.
  - » No change in industrial wage rate.

# Lewis-Fei-Ranis model [2]



# Lewis-Fei-Ranis model [3]

## ■ Policy implications

- Importance of agricultural productivity
- High wage rate is incompatible with industrialisation.

## ■ Empirical evidence

- Horizontal labour supply curve questionable

# Lewis-Fei-Ranis model [4]

## ■ Lacunae

- Skill compatibility
- Choice of industrial technology
- Comparative advantage

## ■ Puzzle

- Coexistence of widespread unemployment and downward stickiness of wages

# Efficiency wage [1]

## ■ Production function

- $Q = F(n\lambda(W))$ ,  $F' > 0$ ,  $F'' < 0$ ,  $\lambda'(W) > 0$
- $Q \equiv$  output;  $W \equiv$  wage rate  
 $n \equiv$  number of hours/weeks of labour employed  
 $\lambda \equiv$  labour efficiency

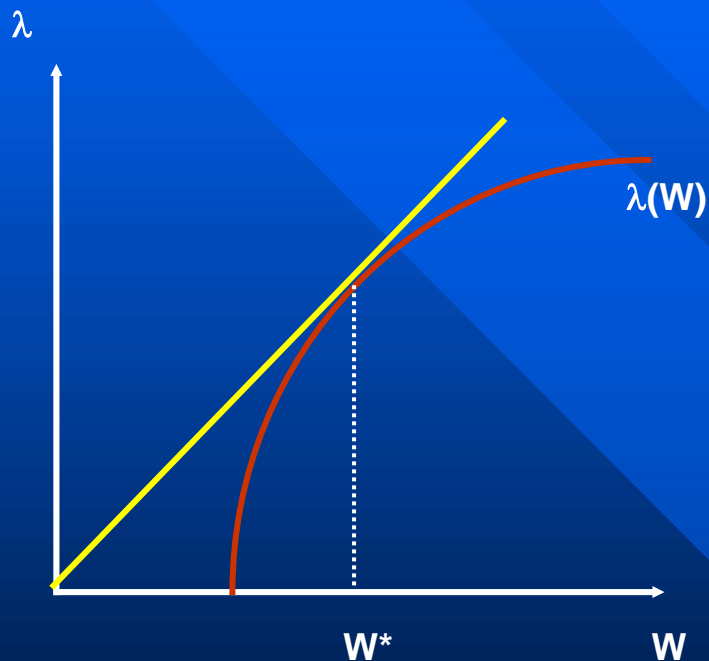
## ■ Choice variables

- $n$  and  $W$

## ■ Firm's problem

- Max  $(F - nW)$ , assuming price of output equals 1
- First order conditions will yield  $W^*$  (efficiency wage)

# Efficiency wage [2]

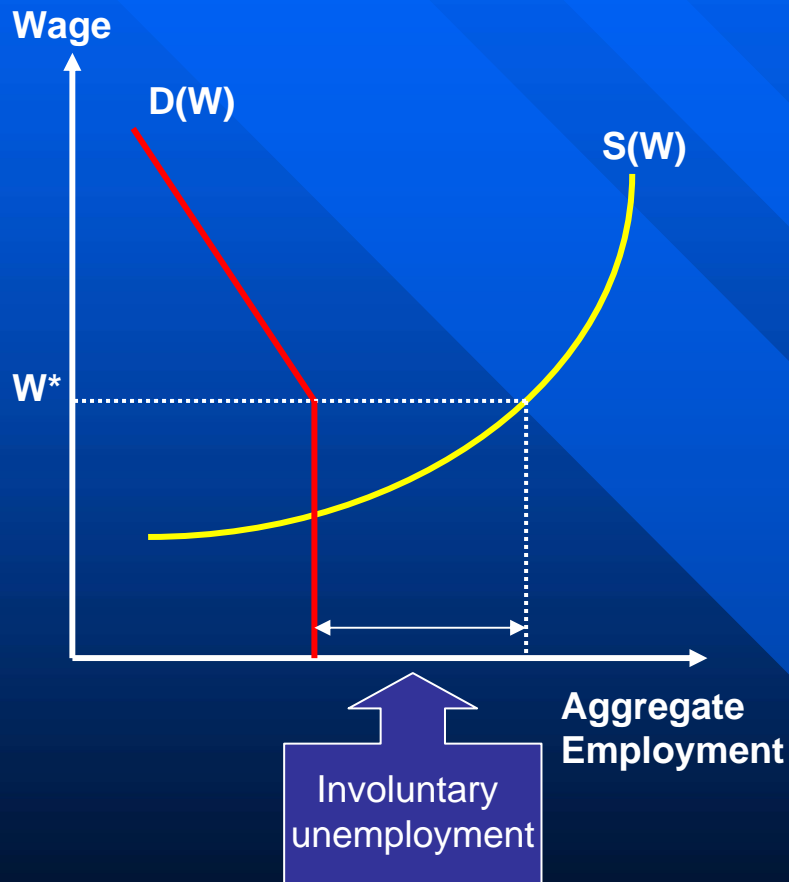


- Efficiency wage
  - At  $W = W^*$ , the firm minimises the ratio  $W/\lambda(W)$ , i.e., the cost of one efficiency unit of labour
- Changes in  $W/\lambda(W)$ 
  - Initially,  $\lambda(W) = 0$ , and hence ratio is infinite
  - For  $W < W^*$ ,  $\lambda(W)$  rises rapidly but  $W$  is still high relative to  $\lambda(W)$
  - For  $W > W^*$ ,  $\lambda(W)$  falls relative to  $W$  because of diminishing marginal productivity



# Efficiency wage [3]

## ■ Involuntary unemployment



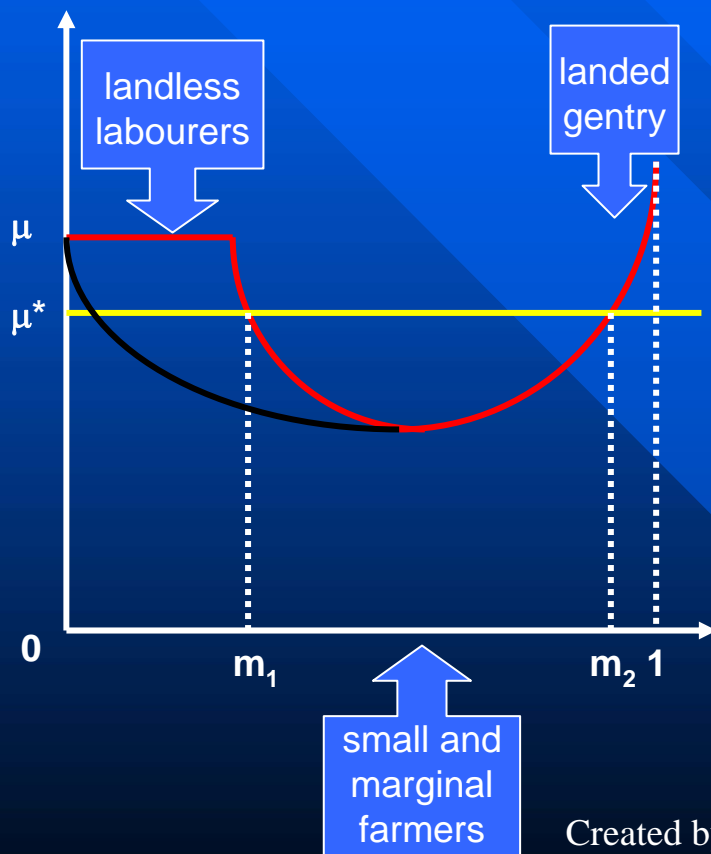
## ■ Implication

- The demand for labour is inelastic for wages below  $W^*$ , and has the usual downward sloping shape for  $W \geq W^*$

## ■ Extension

- $W^*$  will be higher whenever:
  - » Firms face a search cost  $R(W)$
  - »  $R'(W) < 0$  and  $R(W)$  convex (i.e.,  $R''(W) > 0$ )

# Efficiency wage [4]



- Land ownership
  - Continuum from 0 to 1
- Wage and productivity
  - $\mu \equiv$  minimum cost of buying one efficiency unit of labour
  - $\mu^* \equiv$  aggregate marginal product of effective labour
- Unemployment
  - Voluntary and involuntary
- Land reforms
  - Reduce involuntary unemployment

# Efficiency wage [5]

## ■ Empirical evidence

- Response of wage rates to changes in demand and supply conditions in the labour market not as stable as the physiological relationship between nutrition and productivity
  - » Both for casual labourers and people with long-term contracts who are more likely to get efficiency wage
- Unemployment probabilities and wage diversity not as influenced by land and asset holding as predicted

# Impact of social norms [1]

## ■ Observation

- Despite developing economies being labour surplus, efficiency wages exist; labourers do not undercut each other to reduce wages to market clearing levels

## ■ Labourer behaviour

- Perceives a wage vector  $w = (W_1, \dots, W_i, \dots, W_N)$
- On the basis of  $w_i$ , labourer  $i$  estimates her own probability of employment
- Her expected payoff is given by the following:
- $P_i(w) = p_i(w)W_i + (1 - p_i(w))W_0$
- when  $W_0 \equiv$  reservation wage

# Impact of social norms [2]

## ■ Inference

- If all labourers have a reservation wage of  $W_0$ , and if that is also the market clearing wage, any  $W_i > W_0$  would be better, for a positive  $p$

## ■ Problem

- $W_i > W_0$  can be sustained only if no labourer undercuts the others' wages

## ■ Enforcement

- Threat to reduce  $W_i = W_0$  for all periods  $(t + j)$  if labourer  $i$  undercuts others in period  $t$
- Whether the threat has any effect would depend on the rate at which labourer  $i$  discounts the future

# Impact of social norms [3]

## ■ Problems with the model

- Assumes *common knowledge* which may not hold if there is a lot of migration
- The threat that a labourer will forever be penalised by everyone by reducing the wage rate to  $W_0$  is not credible
- There is scope for cooperation between employers and some labourers who are promised a wage rate a little higher than  $W_0$  in perpetuity

## ■ Other issues

- Social acceptability of inter-personal variation in wage rates
- Social processes that match employers and employees along the lines of location, ethnicity, religion etc
- Emergence of *de facto* insider-outsider models in labour markets, where insiders are used to identify the more productive outsiders, and monitor the latter at a later stage

# Labour tying [1]

## ■ Explanation I

- Employer concern about availability of skilled labourers in the peak season
- Promise of wage in excess of (marginal) productivity in the lean season, in exchange for guaranteed supply in the peak season

## ■ Explanation II

- Labourers are more risk averse than employers
- They accept relatively low wage during peak season in exchange for guaranteed employment in the lean season
- Casual labourers exist in equilibrium because it is costly to hoard labour

# Labour tying [2]

## ■ Explanation III

- Efficiency wage has to be paid to labourer in lean season because consumption (or nutrition) enhances productivity with a lag

## ■ Modelling labour tying - I

- In peak season, contracted wage exceeds market clearing wage
- A labourer has incentive to renege on the contract, after benefiting from it during lean season
- The premium offered in the tied contract has to be sufficiently large to discourage the labourer from reneging on the contract
- The higher cost of the contract has to be traded off with the potential cost of not having enough labourers during peak season
- In equilibrium, there will be an active casual labour market



# Labour tying [3]

- Modelling labour tying – II
  - Two periods
  - Work in first period is complex and difficult to monitor, but outcome is known at the end of second period
  - Work in second period simple and easy to monitor
  - Tied labour works for employer in both periods, but casual labour only in second period
  - If outcome is “bad” at the end of second period, tied labourer may lose his contract
    - » The threat is *real* if loss of contract makes the labourer worse off
    - » The threat is *credible* if the employer can easily find other similarly productive labourers to replace him
  - On account of incentive premium, and given the fact that having casual labourers makes the threat credible, there is casual labour in equilibrium

# Labour tying [4]

- Impact of economic development
  - Greater labour tying
    - » Tighter labour markets
    - » Increase in complexity of production, leading to increased demand for job-specific skills
  - Less labour tying
    - » Greater outside opportunity for labourers, increasing reservation wages (and incentive premium)
    - » Greater ‘voice’ and ‘exit’ as opposed to ‘loyalty’
    - » Greater access to capital and technology, making production structure less labour intensive
  
- Implications for income distribution