

## ↳ Labor Market

- higher production → higher employment
- higher employment → lower unemployment
- lower unemployment → higher wages
- higher wages → higher pricing products
- higher prices → workers ask higher wages

### Overview of labor Market

Total population → Employed

→ Unemployed looking for work

→ out of labor force - retired

- injured

→ homemakers

→ unable to work  
students etc.

USA →  $\frac{3}{4}$  of <sup>separations</sup> layoffs → quit  
-  $\frac{1}{4}$  laid off.

on average every day 50,000 people become unemployed.

- duration of unemployment → average 2-3 months

$$\text{Unemployment Rate} = \frac{\text{unemployed}}{\text{economically active population}} \times \frac{100}{1}$$

Unemployment rate will increase if new people enter the labor market

- higher the labor force absorption rate of the formal sector  
→ lower the number of unemployed people

economically active labor force → between 16 + 65

→ willing, available + able to work.

labor force participation rate → economically active population as a % of the potential labor force.

### Movements in unemployment

→ When labor market is slack (demand for jobs/labor) slows down → workers more likely to lose their jobs + the probability of finding a new job is lower.

Firms decrease demand

↳ hire fewer new workers

↳ layoff currently employed workers

(hire less workers → depend on quits/retirement to reduce labor force)

→ if adjustment takes place through fewer hires, → chance to find a new job diminishes.

↳ fewer hires / fewer openings

↳ more unemployment → more unemployed people →

↳ less new hires

→ if adjustment takes place through layoffs → employed at a higher risk to lose their jobs.

↑ in unemployment rate implies that workers are more likely to lose their jobs + if they are unemployed the probability of finding a job is lower.

aggregate unemployment rate →

→ effect individual workers

↳ movements of the unemployment rate → welfare of workers

↳ wages.

wage eff in 2 ways if the unemployment is high

↳ higher probability of losing their jobs.

↳ unemployed face higher probability of not finding a job. → unemployed longer time.

↳ less quits when unemployment is high.

Wage determination.

Wages are set in diff ways

collective bargaining → union and firm.

→ employer + employee.

↳ higher skills → higher wages (negotiate)

↳ entry level → take it or leave it.

Negotiations → different in different countries.

→ 2 factors universal.

- 6/
- workers paid a wages that exceeds reservation wages
    - ↳ the wage that is high enough so that they prefer to be employed rather than unemployed
  - wages depend on labor conditions.
    - ↳ lower unemployment → higher the wages

## Bargaining

Bargaining power depends on 2 levels

- how costly is it to replace the worker
  - how hard would it be to find a new job.
- the more costly to replace + easier to find a job → higher his bargaining power.

\* nature of his job.

- McDonalds not costly
- CEO more costly.

if he asks for a higher price they can lay him off if its an unskilled worker.

- skilled worker asks for increase might get it.

\* Market conditions.

- unemployment low → more difficult for firms to find workers to replace current workers.

- easier for workers to find a new job

Weak bargaining

- unemployment high → more workers available → lower wage rate → workers unable to find jobs. workers may be forced to accept lower wages

## Efficiency Wages

→ may pay more than the reservation wage to get

→ workers that are more productive especially if it takes a while to learn a job correctly

→ paying more will keep the worker there longer

→ less workers will quit because the profit is attractive.

→ paid just reservation wage (many will quit, leave, people need to be retrained.

→ paying more than reservation wage decreases turnover + increases productivity.

→ most firms want workers to feel good about their jobs.

→ feeling good promotes good work → higher productivity.

→ higher wages can help this

→ theories that link productivity to wages → efficiency wage theories

\* suggest wages depend both on nature of the job + labor market conditions.

→ high tech firms → employee moral + commitment as essential to the quality of their work + will pay more than firms where the activities of workers are more routine.

- \*  $\rightarrow$  low unemployment  $\rightarrow$  more attractive for workers to quit.
- $\rightarrow$  easy to find a new job  $\rightarrow$  firm wants to avoid an increase in quits + will have to increase wages to induce workers to stay with the firm.  $\rightarrow$  lower unemployment  $\rightarrow$  higher wages  $\rightarrow$  higher unemployment  $\rightarrow$  lower wages

### Wages, Prices + Unemployment

nominal wage =  $w$   
 expected price level =  $p^e$   
 unemployment rate =  $u$   
 other variables that could affect wage setting =  $z$

$$W = P^e F(u, z)$$

### Expected price level

$\rightarrow$  Why does price level effect wages

$\hookrightarrow$  Both workers + companies care about REAL wages not nominal wages

\* Workers do not care about how many dollars they received, but about how many goods they can purchase with this money. (Care about nominal wage relative to price of goods they can buy  $w/p$ )

\* Firms do not care about the nominal wages they pay but ~~the~~ about the nominal wages they pay relative to the price of the goods they sell, so they also care about  $w/p$ .

→ workers expect the price level of a good to double, they will ask for a doubling of their nominal wages.

\* thus if both the firm / employee expect the price to double they will agree to double the nominal wage keeping the real wage constant.

→ increase in the expected price level leads to an increase in the nominal wage, in the same proportion

→ wages are set in the nominal wages terms + that's why wages depend on expected price level rather than actual price level.

→ nominal wages are normally set for a year. → if price level goes up unexpectedly during the year the nominal wages does not go up + real wages are decreased.

## Unemployment Rate $\mu$

→ increase in unemployment → decrease nominal rate

→ higher unemployment → lower bargaining → forced to accept lower wages.

→ higher unemployment → allows firms to pay lower rates + still have workers willing to work.

## The Other factors $z$

→ all other factors that affect wages. → increase in  $z$  → increase wages.

→ long list of potential factors

\* unemployment insurance.

↳ payment of unemployment benefits to workers who lose their jobs.

↳ higher ~~ex~~ unemployment benefits → allows workers to hold out for higher wages.

\* increase of minimum wage → increases all wages + some above minimum wage level.

\* increase in unemployment protection → more expensive for firms to lay off workers + it increases the bargaining power of the worker.

→ no unemployment insurance → workers would work for very low wages to stay from being unemployed. → but it does + it allows workers to hold out for higher wages.

increase in  $Z$  = increase in wages

$$\therefore P_e \uparrow \Rightarrow W \uparrow$$

$$P_e \downarrow \Rightarrow W \downarrow$$

$$u \uparrow = W \downarrow$$

$$u \downarrow = W \uparrow$$

$$\Delta Z = \Delta W.$$

lower unemployment increases the bargaining position of workers & they are able to negotiate for higher wages.

In terms of efficiency considerations, it might be in the interest of firms to increase wages to induce workers to



stay with the firm + not resign in order to find other work at another firm.

Increase in expected price level implies that given the nominal wages the expected real wage decreases. In order to prevent Real Wages from decreasing workers will try and negotiate for higher nominal wages.

### Price Determination

$$P = (1 + \mu)W.$$

→ prices are set by firms depending on the costs they have.

↳ these costs depend on the nature of the production function. (relation between inputs used in production and the quantity of output produced)

→ assume that firms produce goods + labour is the only factor of production

$$\therefore \text{Production is } Y = AN$$

$Y$  = output

$N$  = employmen

$A$  = labour productivity.

→ this implies that labour ~~and~~ productivity (output per worker) is constant + equal to  $A$ .

→ constant returns to labour in production → if a firm doubles the workers, they double the amount of

output they produce.

In reality firms use other factors of production (raw materials, capital, technological advances  $\rightarrow$  thus labour productivity  $A$  increases over time.)

For this use  $A$  as a constant and that 1 worker produces one unit  $\therefore A = 1$

$\therefore$  Production function is  $Y = N$

$\rightarrow$  the cost of producing one more unit is the cost of employing one more worker.

$\rightarrow$  marginal cost of production is  $W$  (cost of wages)

$\rightarrow$  Perfect competition in the goods market  $\rightarrow$  price of 1 unit of output would be equal to marginal cost.

$$P = W.$$

$\rightarrow$  But the goods market is competitive + firms charge a price higher than their marginal cost

$$\therefore P = (1 + \mu) W \quad \mu \text{ is the markup of cost over price}$$

example: cost of labour - 50

markup 20%

produces 1 unit

$$= P = (1 + 0.2) 50$$

$$= \underline{60}$$

## Natural Rate of Unemployment

$$P_e = P.$$

### Wage Setting Relation.

- higher the unemployment → lower the real wage that workers can bargain for.
- unemployment erodes the bargaining power of labor + the higher the level of unemployment, the less bargaining power the workers have + the lower the real wage they can bargain for.
- Wage setting does not tell what the actual wage will be.
- workers try to achieve a desired real wage by bargaining for a nominal wage, but whether the desired real wage is achieved will depend on what happens to the price level.
- Price level is determined by the markup used by firms
- For a given price level  $P$  and a bargaining position of labor (as captured by  $z$ ), the wage relationship is derived by considering the impact of a change in the unemployment rate on the real wage demand of workers.

- higher unemployment → lower bargaining power → lower wage
- lower unemployment → higher bargaining power → higher wages.

∴ At a given price level of  $P$

- higher unemployment rate → lower bargained real wage
- lower unemployment rate → higher bargained real wage.

→ we assume price level is constant + the actual price level + expected price levels are the same.

→ any factor that increases the bargaining power of the worker other than the unemployment rate, will cause the wage-setting relationship to change

→ if labor legislation provides workers with more protection against layoffs, at each unemployment rate their bargaining power is strengthened and the curve shifts to the RIGHT

∴ at each + every unemployment rate workers will bargain for a higher real wage. Whether they get this wage or not depends on what happens to the price level.

Wage determination implies a negative relationship between real wage  $w/p$  and the unemployment rate  $u$

### Activity 6.5

Plotting Real Wage / unemployment rate.

• Downward sloping as unemployment rate erodes the bargaining power of the worker

→ an increase in the bargaining position of the worker due to other factors other than the unemployment rate shifts the WS Curve upwards indicating that at each level of unemployment rate the workers are able to bargain for a higher wage. (factors like legislation to prevent layoffs)

## Price - setting relations

- the real wage that is paid to labour is a function of the price - setting behaviour of firms.
- price level is influenced by the nominal wage + markup of firms
- labour is the only factor of production + labour cost the only cost of production, then the price level is equal to

$$P = (1 + \mu)W$$

- implies that whatever the level of the nominal wages the price of the products produced will always be a certain % (markup) higher than the wages paid to the workers. → it is this markup that determines how much of the production goes to the worker + how much to the company.

### Example:

labour cost is R 100

Markup 20%

$$P = (1 + 0.20) 100$$

$$= 120$$

Cost of worker = \$10,000 → production 100 units

$$10000 / 100 = 100$$

∴ Real wage = worker cost / product price

$$10000 / 120$$

$$= 83.33$$

at 12000 cost = 120 per unit

$$\text{Markup } P_e = 144$$

$$\text{Real Wage} = 12000 / 144 = 83.33$$

Remains the same

Markup decreases: to 10%  $\rightarrow$  real wage increases

$$10000 / \text{unit cost } 100$$

$$P = 110 [(1 + .10) \times 100]$$

$$\begin{aligned} \text{Real Wage} &= 10000 / 110 \\ &= 90.9 \end{aligned}$$

laborer's claim higher / firm lower

Real wage is horizontal as a result of the assumption that it is not influenced by the unemployment rate.

$\rightarrow$  natural rate of unemployment is the unemployment rate is such that the real wage chosen in the wage setting is equal to the real wage implied by the price setting

$\rightarrow$  Price setting decisions determine the real wage paid by firms.

$\uparrow$  markup  $\rightarrow \uparrow$  prices given the wage they have to pay  
 $\rightarrow$  leads to a decrease in real wage

$\rightarrow$  firm increases its markup  $\rightarrow$  you are still paid the same wage.  $\rightarrow$  if all the firms increase their markup your real wage is lower

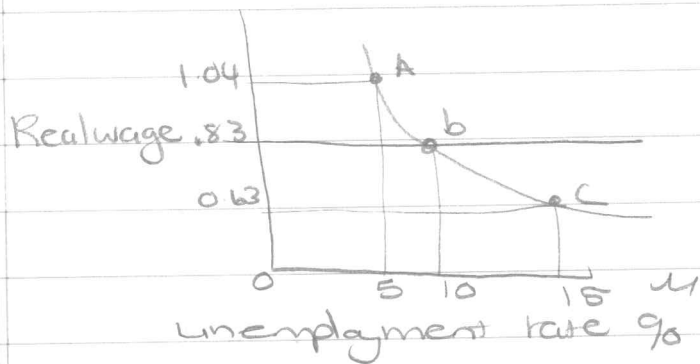
$\uparrow$  markup  $- \downarrow$  real wage.

$\downarrow$  markup  $\rightarrow \uparrow$  real wage.

Activity 6.6

## Equilibrium real wages + Unemployment

→ real wage implied by wage setting is equal to the real wage implied by price setting. (Point B)  
← 10%



- At this point of equilibrium → natural rate of unemployment
- any other rate of unemployment → wage setting differs from real wage implied by price setting
  - at 5% of unemployment → workers will bargain for wages higher than the implied real wage.
- Change in the natural rate of unemployment takes place if
  - \* bargaining position of workers changes due to factors other than the unemployment rate.
    - increase in bargaining power will shift the WS curve upwards + the natural rate of unemployment increases → takes a higher natural rate of unemployment to ensure that the bargained wage is equal to the implied real wage

## \* Change in Markup

→ Increase in markup shifts PS Curve down ward + the natural rate of unemployment increases. → takes higher rate of unemployment to ensure bargained wage is equal to the implied real wage

→ if the bargaining power of the worker was eroded (weakened) by labour legislation the WS curve would shift downwards + the natural rate of unemployment decreases.

→ if firms were forced to decrease their markup, the PS curve will shift upwards + the natural rate of unemployment would decrease.

→ equilibrium unemployment rate = natural rate of unemployment

→ Unemployment rates are influenced by several factors  
↳ increase in unemployment benefits → shifts the WS curve up. → Equilibrium unemployment rate increase.  
∴ people will wait longer for better wages due to good unemployment benefits.  
→ higher unemployment benefits → higher real wages.

↳ less stringent enforcement of existing anti-trust legislation. (firms collude easier + increase their pricing → price fixing)



↳ By letting firms increase their prices given the wage less stringent enforcement of the anti-trust legislation leads to a decrease in real wage  $\rightarrow$  higher unemployment is needed to make workers accept this wage.  $\rightarrow$  increase in natural unemployment rate.

∴ increase in unemployment benefits  $\rightarrow$  increase in the natural rate of unemployment.

∴ increase in markups decreases real wages  $\rightarrow$  increase in the natural rate of unemployment.

### Activity 6.7

### From unemployment to Employment

$\rightarrow$  if we know the natural rate of unemployment we can derive the natural level of employment

$$1 - \frac{u_n}{L}$$

Example: natural level of output

$\rightarrow$  natural level of unemployment - 10%

$\rightarrow$  economically active population - 14 million

$\rightarrow$  each person  $\rightarrow$  employed worker produces 1 unit

$$\begin{aligned} \text{unemployment} &= 14 \text{ million} \times 10\% = 1.4 \text{ million} \\ 14 \text{ million} - 1.4 &= 12.6 \text{ million} = \underline{\underline{Y \text{ outputs}}} \end{aligned}$$