

# Labor Market - Part 2

EC 313, Macroeconomics

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# Book Chapter 6

# Review

# Review

## Labor Market Equilibrium

Labor Supply or Wage-Setting Relation (WS):

$$\frac{W}{P} = F(\underbrace{u, z}_{(-,+)})$$

Labor Demand or Price-Setting Relation (PS):

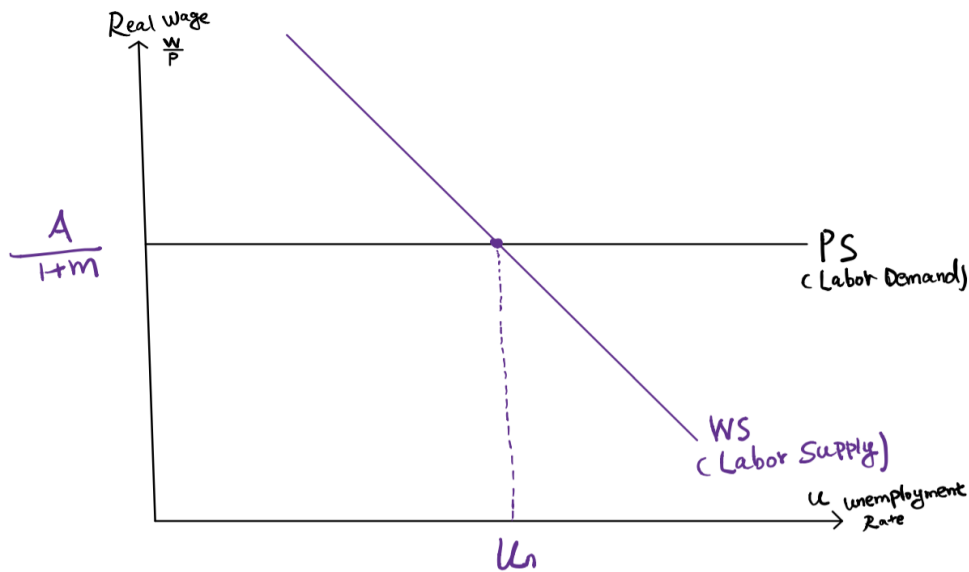
$$\frac{W}{P} = \frac{A}{1 + m}$$

# Review

## Labor Market Equilibrium

This labor market model is trying to explain **two variables of interest** in our economy:

- Real Wage  $\frac{W}{P}$
- Unemployment Rate  $u$



# Review

## Labor Market Equilibrium

- **The Equilibrium Real Wage**  $\frac{W}{P} = \frac{A}{1+m}$
- **The Equilibrium Unemployment Rate**  $u_n$  called the natural rate of unemployment.

# Applications

# Applications

## Unemployment Benefits

**Question:** What happens to equilibrium real-wage and the natural rate of unemployment if unemployment benefits increase?



# Applications

## Unemployment Benefits

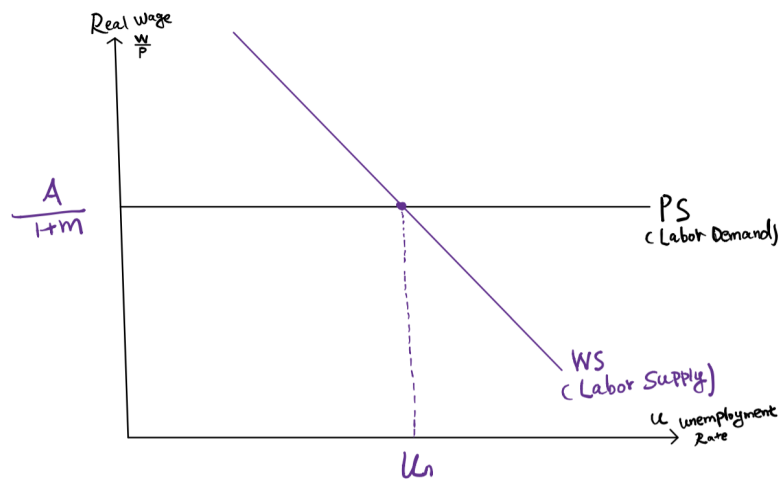
**Question:** What happens to equilibrium real-wage and the natural rate of unemployment if unemployment benefits increase?

- The (Labor Supply) WS Curve **shifts up**
  - $z$  increases, WS:  $\frac{W}{P} = F(u, z)$ ,  $\frac{W}{P}$  increases for a given  $u$ .
- The (Labor Demand) PS Curve **doesn't move**

# Applications

## Unemployment Benefits

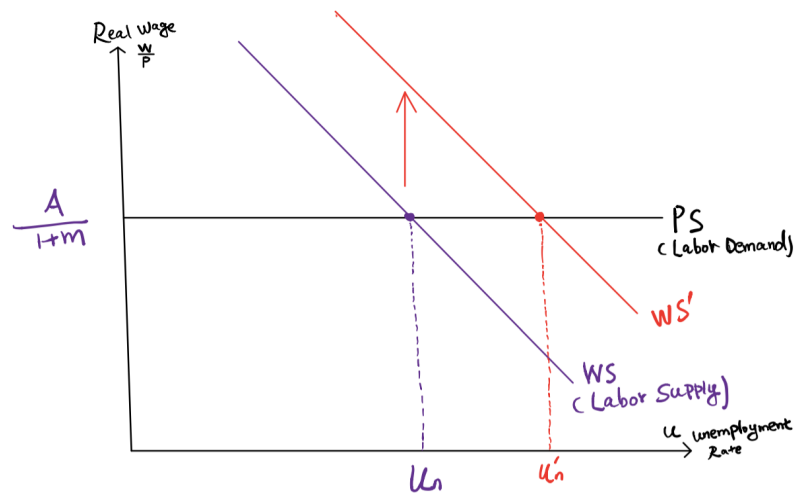
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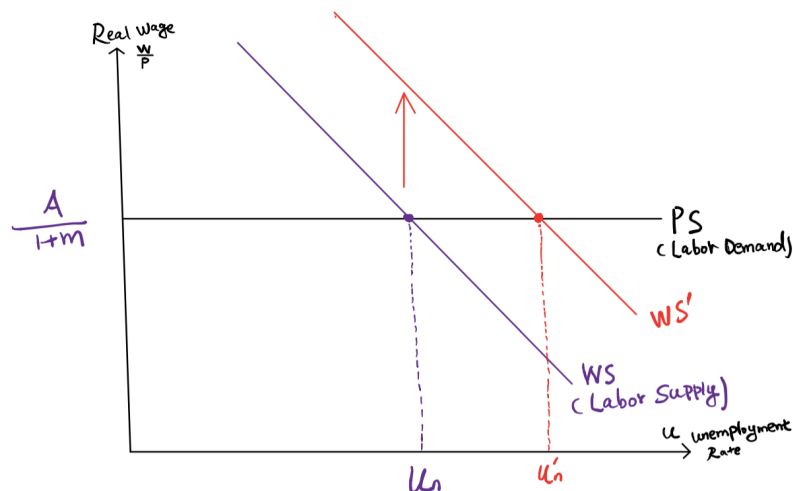
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# Applications

## Unemployment Benefits

**Question:** What happens to equilibrium real-wage and the natural rate of unemployment if unemployment benefits increase?



**Equilibrium Real Wage** doesn't change

**Natural Rate of Unemployment Rate** increases. (Think about Europe)

# Applications

## Anti-trust Enforcement

**Question:** What happens to equilibrium real-wage and the natural rate of unemployment if a country increases its anti-trust enforcement (meaning government reduces monopoly power)?

# Applications

## Anti-trust Enforcement

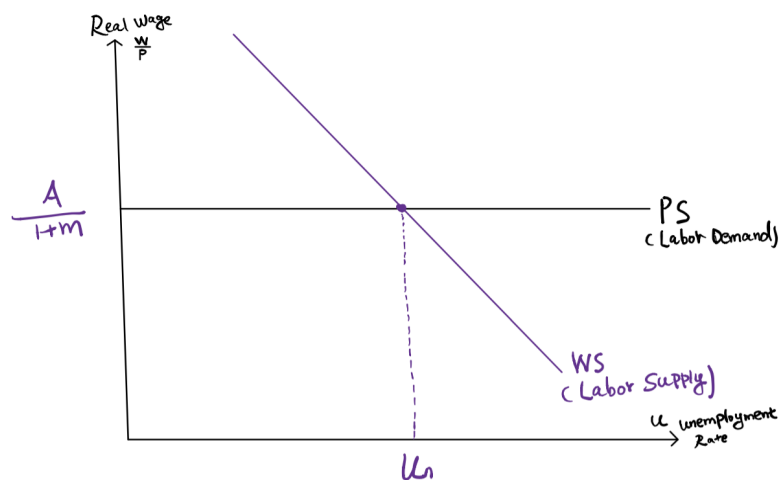
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# Application

## Anti-trust Enforcement

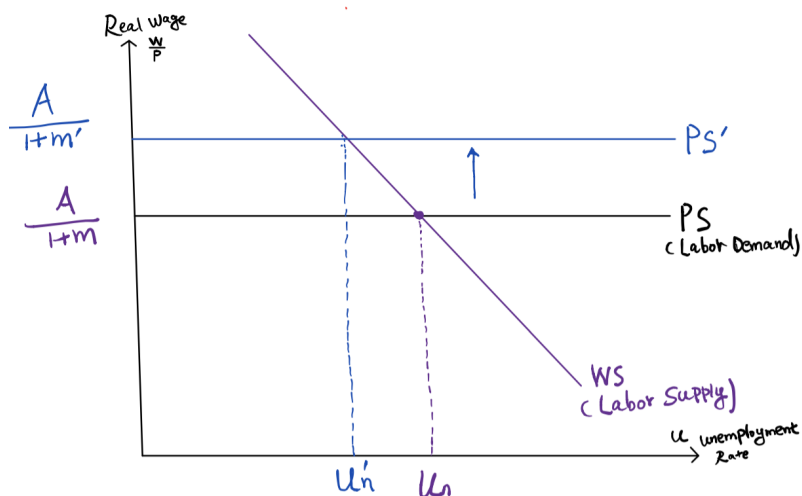
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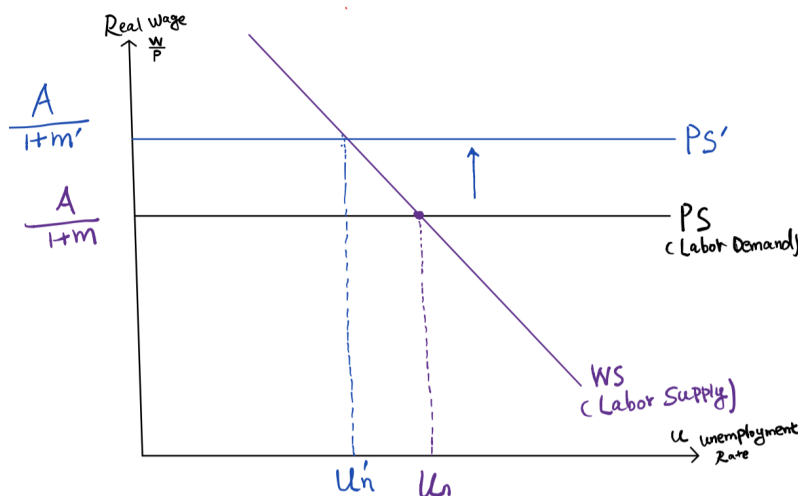




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**Equilibrium Real Wage** increases.

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# Application

## Technology Advancement

**Question:** What happens to equilibrium real-wage and the natural rate of unemployment if a country experiences a major technology advancement?

# Application

## Technology Advancement

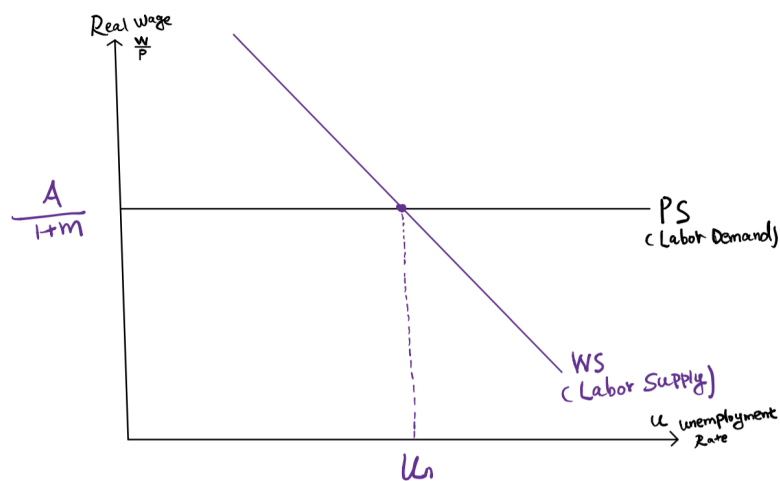
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# Application

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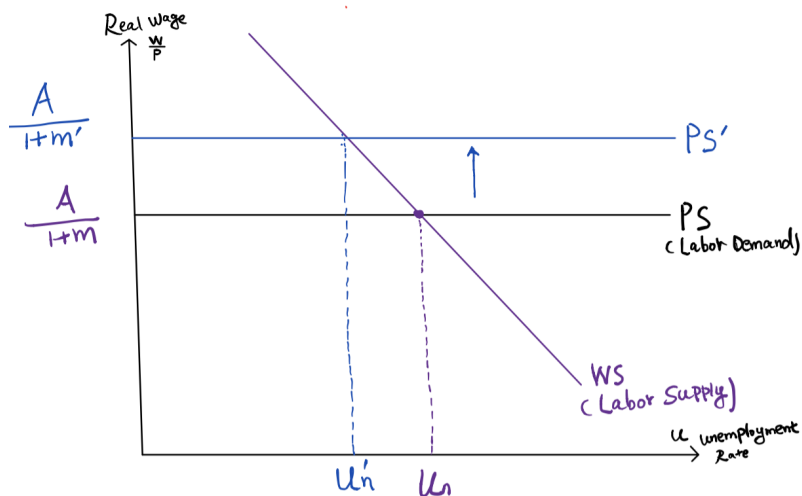
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# Application

## Technology Advancement

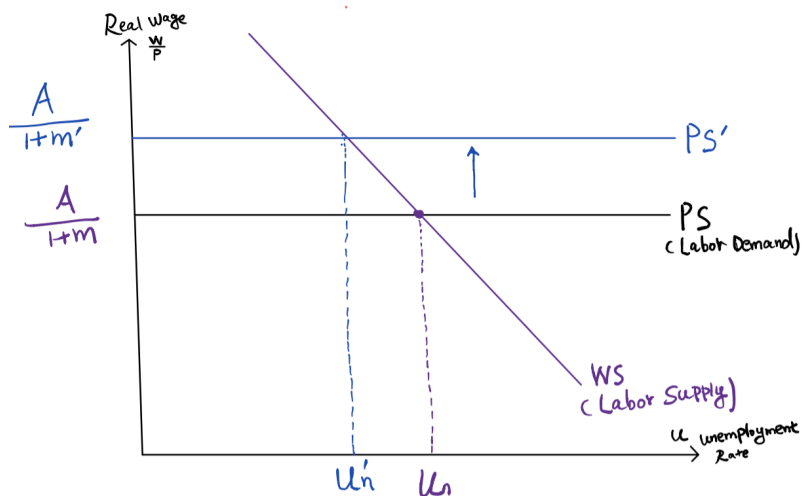
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# Application

## Technology Advancement

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# Medium-Run Output

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## Derive Output

Recall: the Labor Market Model is a **medium-run** model.

The **variables of interest** in the labor market model are: **real wage** and **unemployment rate**.

**Question: Is output an endogeneou variable?**

We need to know whether output depends on **real wage** or **unemployment rate**. If output depends on either one of them, the output is endogeneous.



# Medium-Run Output

## Derive Output

The answer is that **output is indeed endogenous**.

Recall:

- Output is  $Y = A * N$  where  $N$  is the number of people who are employed.
- By definition  $u = \frac{L-N}{L}$ , where  $L$  is the labor force.
- Transform  $u = \frac{L-N}{L}$ , we get  $N = (1 - u)L$
- In conclusion,  $Y = A * N = A * (1 - u)L$

# Medium-Run Output

## Derive Output

The answer is that **output is indeed endogenous**. In conclusion,

$$Y = A * (1 - u)L$$

**Hence  $Y$  depends on  $u$  which is one of the variables of interest.**

When  $u_n$  is the natural rate of unemployment (equilibrium unemployment rate), we have the following relation for equilibrium output:

$$Y_n = A(1 - u_n)L$$

Here  $Y_n$  is called **the natural level of output**.

# Medium-Run Output

## Why "Natural"

**Takeaway:** The natural level of output,  $Y_n$ , associated with a given natural rate of unemployment,  $u_n$ , is such that the Price Setting and Wage Setting relations are equal!

$Y_n$  and  $u_n$  are both **natural** because we assumed **prices equal expected prices**.

# Medium-Run Output

## Conclusion

- **Labor Market Equilibrium** is determined where  $\underbrace{WS}_{Labor\ Supply} = \underbrace{PS}_{Labor\ Demand}$
- **The Medium Run Equilibrium** is determined where  $WS = PS$  with the assumption **Price equals Expected Price!** (  $P = P^e$  ).
- **In the medium run**, equilibrium output is entirely determined by the labor market!
- **Q:** What's next?
- **A:** Look at the interaction of Short Run Policy (IS-LM) and the Medium Run (Labor Market)!

# Medium-Run Output

## Conclusion

We have now covered two cases:

- (Short-run) IS-LM equilibrium (Ch. 5) - Goods Market and Money Market
- (Medium run) Labor Market Equilibrium (Ch. 6)

# Medium-Run Output

## Conclusion

Using these four markets, we can derive (**after the midterm**):

- **Aggregate Supply Relation:** captures the effect of output on the price level. Derived using Labor Market Equilibrium.
  - **Note:** Labor Market determines Aggregate Supply because
$$Y = A * N$$
- **Aggregate Demand Relation:** captures the effect of price level on output. Derived using the IS-LM Equilibrium.
  - **Note:** Goods and Money Market Eqm Determine Aggregate Demand because they capture consumer behavior!