

Labor Market Supply and Demand

ECO 120: Global Macroeconomics

Goals

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Unit Goals

- Define labor demand and identify what influences labor demand
- Define labor supply and identify what influences labor supply
- Predict how wages and level of employment are determined by labor supply and demand.
- Use these skills to make predictions about changes in wages and employment.

Reading and Exercises

2 / 22

- External reading posted on Canvas: Taylor, *Principles of Economics 2e*, Chapter 4
- **Canvas Quiz due Wednesday 11:59 PM.**
Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts
- **Homework/In-class Exercise due Thursday 11:59 PM.**
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Demand

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- In the market for labor, the price of labor is the **wage**, and the quantity of labor is **total hours of employment**
- The **quantity of labor demanded** is the amount of worker time that **employers** are willing and able to hire in a given time period at a particular wage.
- Labor demand follows the **law of demand**: All other things remaining equal, the higher is the wage, the lower is the quantity of labor demanded.

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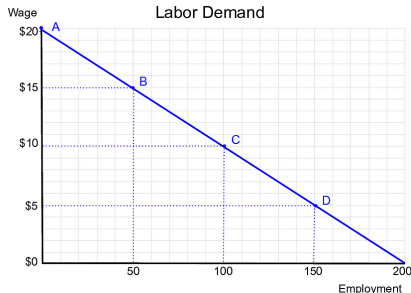
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Demand

Labor Demand Schedule

Point	Wage	L_D
A	\$20	0
B	\$15	50
C	\$10	100
D	\$5	150

Labor Demand Curve



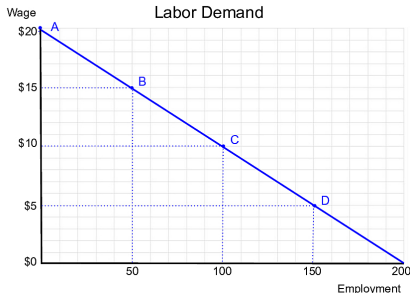
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- **Change in quantity labor demanded:** when there is a **change in wage** causing a **movement** from one point on the labor demand curve to another point.

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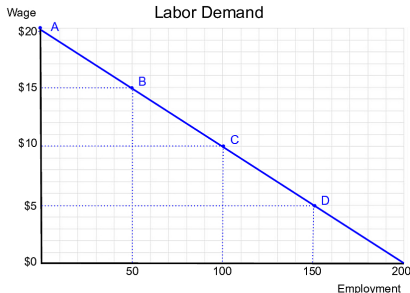
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- Labor supply follows the **law of supply**: All other things remaining the same, the higher is the wage, the higher is the quantity of labor supplied

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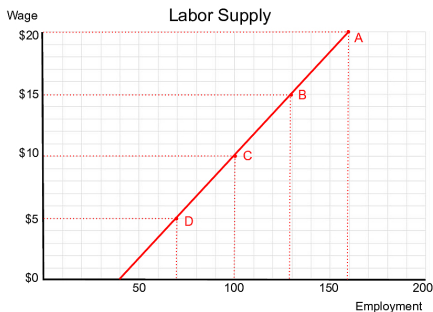
Supply

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Labor Supply Curve

Labor Supply Schedule

Point	Wage	L_S
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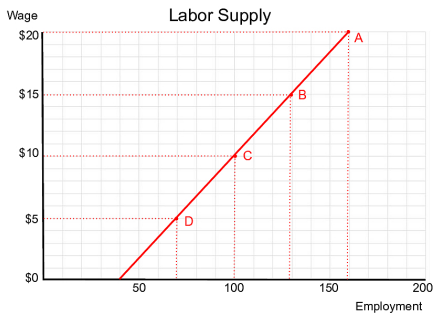
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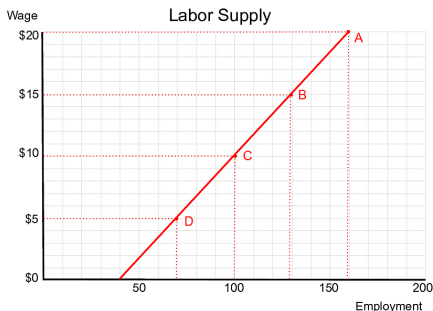
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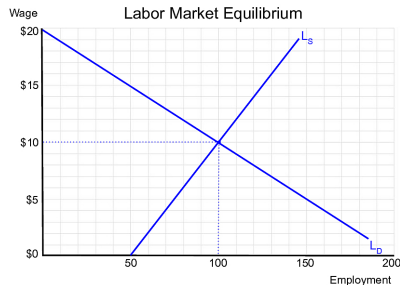
Equilibrium

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Equilibrium Definition

- The **equilibrium wage** is the wage where the quantity of labor supplied is equal to the quantity labor demanded.
- The **equilibrium employment** is the corresponding quantity of labor.
- This is the wage and level of employment that should prevail in the long-run in the labor market

Graphical Equilibrium



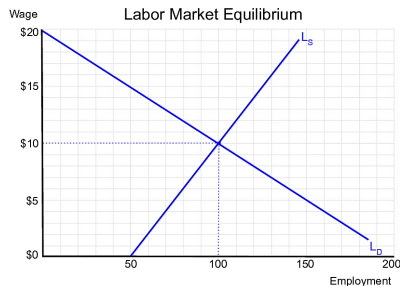
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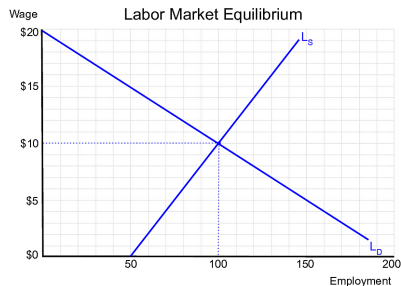
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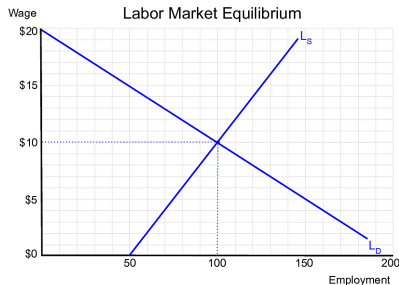
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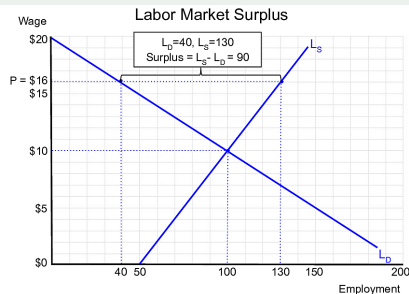
Labor Surplus is Unemployment

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Labor Surplus Definition

- When the prevailing wage is **above** equilibrium wage, quantity of labor supplied exceeds quantity of labor demanded
- Quantity of labor supplied \equiv people who want work
- Quantity of labor demanded \equiv how much employers want to hire
- Difference is the surplus = unemployment
- In an unregulated market, market forces will push wage lower toward equilibrium

Graphical Surplus



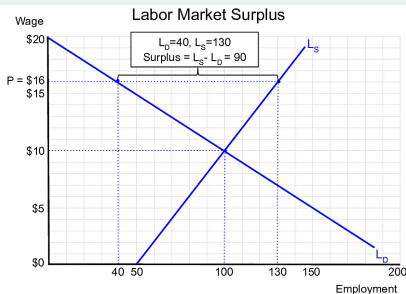
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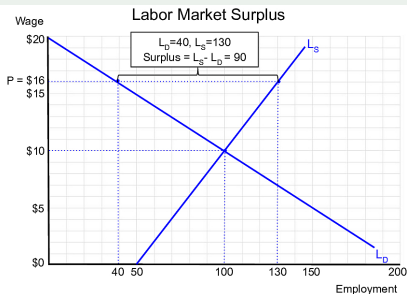
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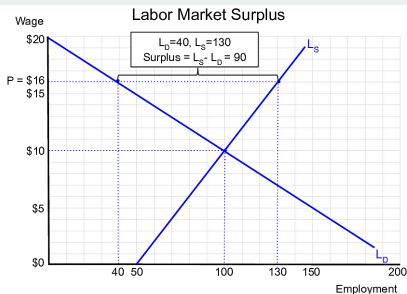
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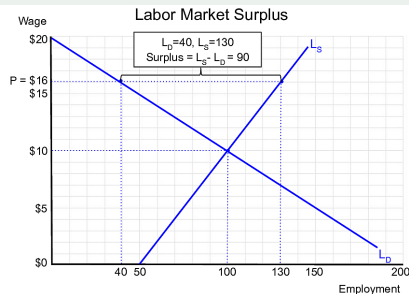
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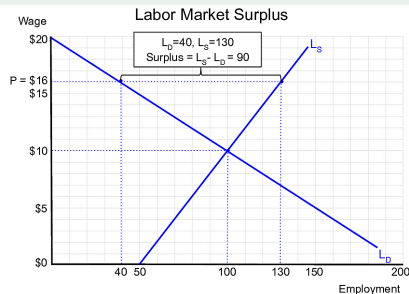
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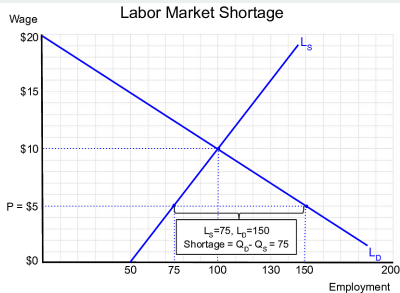
Shortage

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Labor Shortage Definition

- When the prevailing price is **below** equilibrium price, quantity demanded exceeds quantity supplied
- Difference is the shortage
- In an unregulated market, market forces will push equilibrium price higher

Graphical Shortage



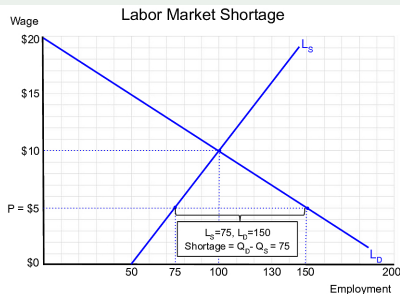
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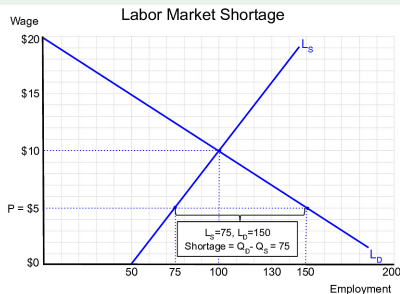
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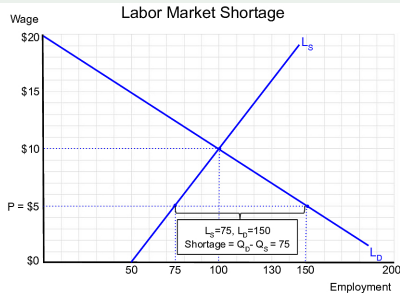
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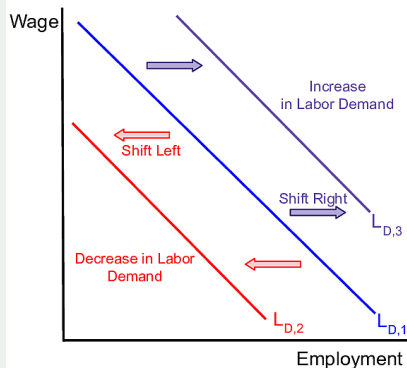
Labor Demand Curve Shifts

10 / 22

Shifts in Whole Demand Curve

- When something *besides the wage* effects labor demand, we say there is a *change or shift in labor demand*.
- Something that **increases** labor demand shifts the labor demand curve to the **right**
- Something that **decreases** labor demand shifts the labor demand curve to the **left**

Shifts in Labor Demand



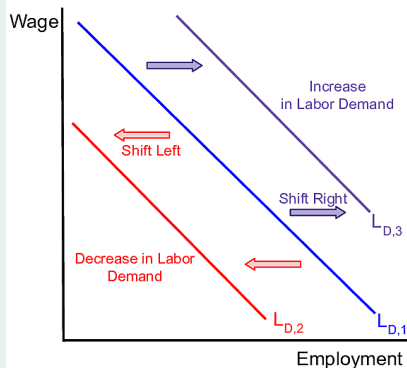
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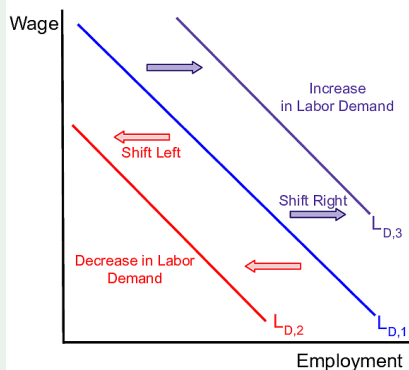
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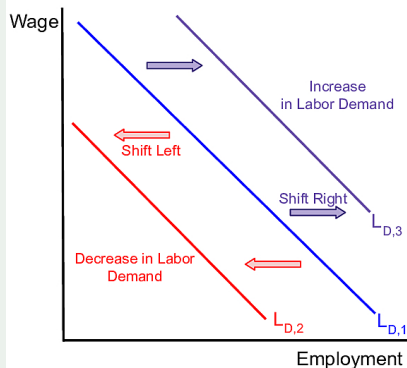
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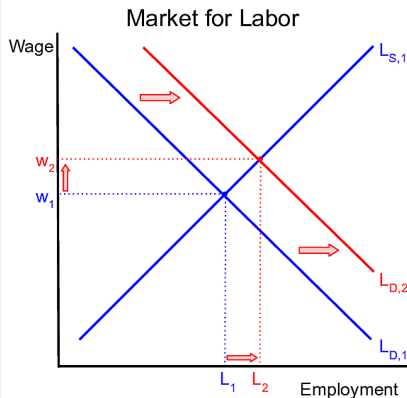
Improvement In Labor Productivity

11 / 22

Mechanism

- If labor productivity improves, workers can produce more goods and services per hour of work
- This generates more revenue for firms per hour of work hired
- This will **shift labor demand right**
- Equilibrium wage increases, employment increases
- Improvements in technology can improve labor productivity **at an aggregate level**

Graphical Equilibrium



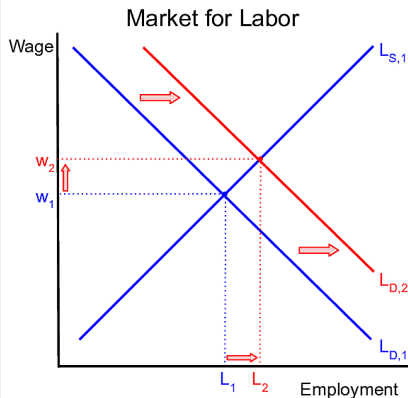
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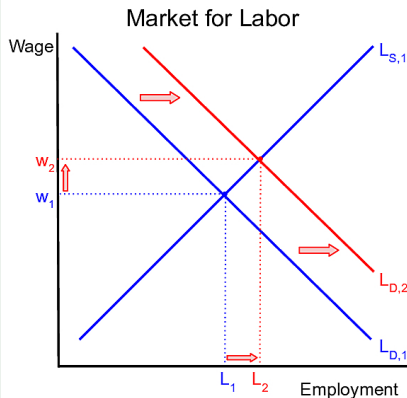
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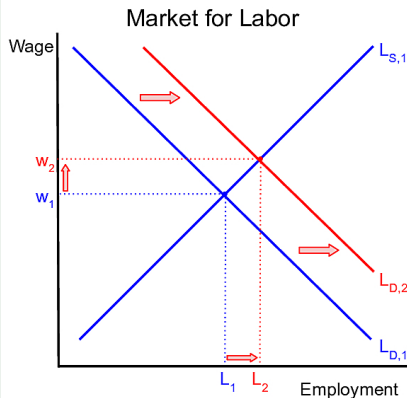
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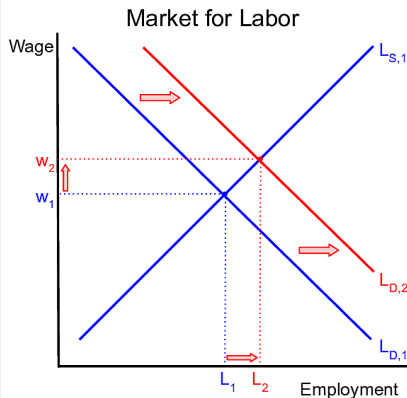
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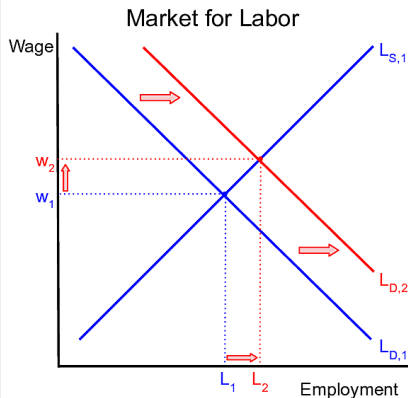
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Spotlight: Daron Acemoglu & Pascual Restrepo

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Automation and New Tasks: How Technology Displaces and Reinstates Labor, *Journal of Economic Perspectives*, Spring 2019.

Displacement + New Tasks

- *Displacement effect*: Automation decreases in demand for certain types of labor, increases in demand for capital instead
- *Productivity effect*: Automation leads to creation of new tasks, increase in demand for other types of labor
- Stagnation in labor demand in last decade due to the displacement effect
- No one effect always dominates the other



Dr. Daron Acemoglu (left)
Professor of Economics
Massachusetts Institute of
Technology



Dr. Pascual Restrepo (right)
Asst Professor of Economics
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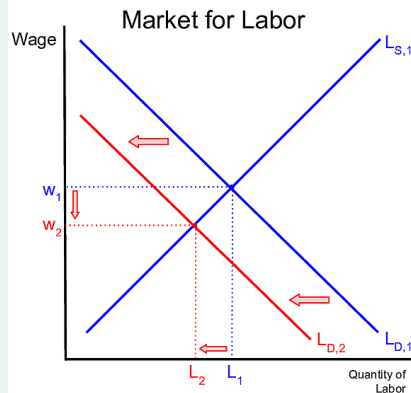
Destruction of Capital Stock

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Mechanism

- Capital complements labor and makes labor more productive
- Suppose a natural disaster leads to a destruction of capital stock
- Less capital stock leads to lower labor productivity and lower labor demand
- This will **shift labor demand left**
- Equilibrium wage decreases, employment decreases

Graphical Equilibrium



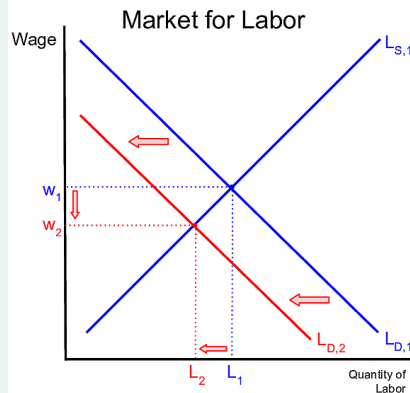
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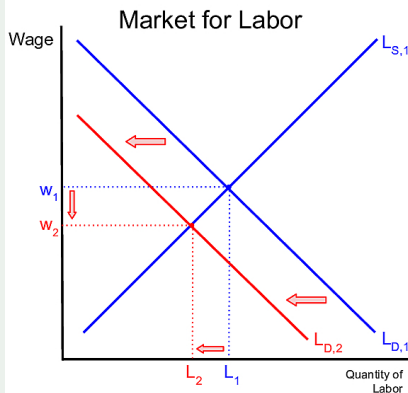
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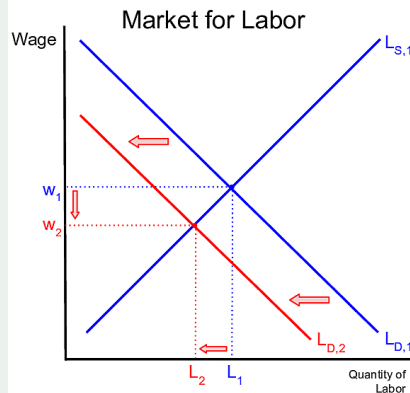
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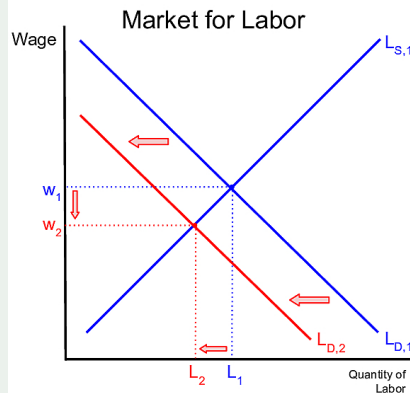
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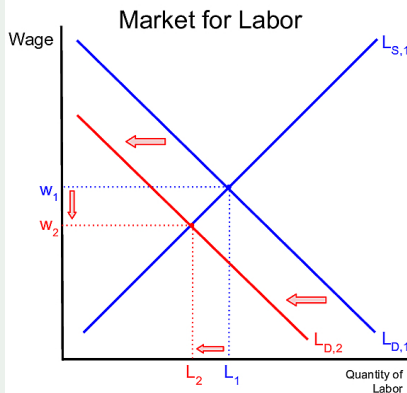
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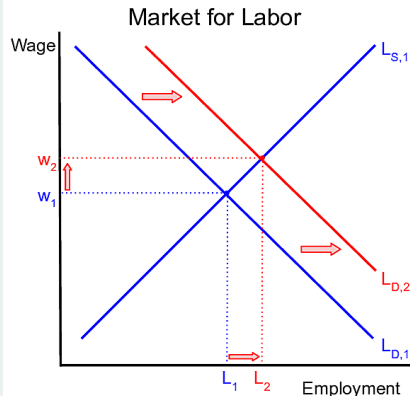
Increase in Demand for Goods and Services

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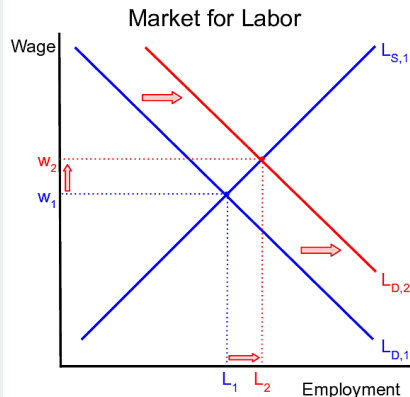
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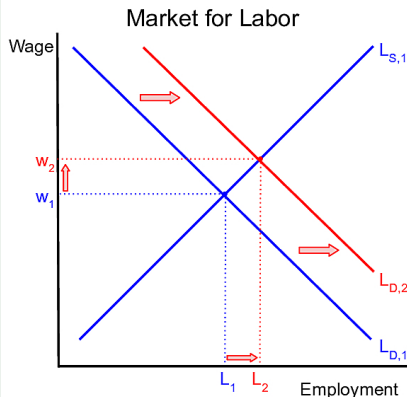
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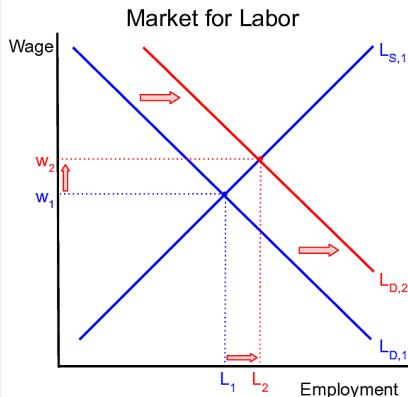
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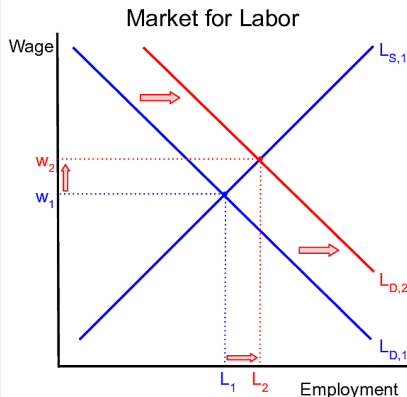
Increase in Demand for Goods and Services

14 / 22

Mechanism

- Labor is a **derived demand**, demand depends positively on the demand for the goods and services the workers produce
- Suppose consumer demand for goods and services increases
- This will **shift labor demand right**
- Equilibrium wage increases, employment increases

Graphical Equilibrium



Scholar Spotlight: Kerwin Kofi Charles

15 / 22

Housing Booms, Manufacturing Decline, and Labor Market Outcomes *Economic Journal*, 2018 (with E. Hurst and M. Notowidigdo)

Offsetting Effects

Manufacturing 2000-2006:

- Automation and international trade led to declines in demand for manufacturing employment

Housing Boom 2000-2006:

- Increased demand for housing
- → Temporary increased demand construction labor

Without housing boom: employment declines would have been larger and come earlier



Dr. Kerwin Kofi Charles
Dean and Professor of Economics
Yale School of Management

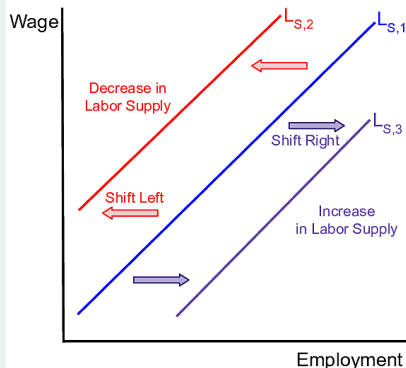
Supply Curve Shifts

16 / 22

Shifts in Whole Supply Curve

- When something *besides the wage* affects how much people are willing and able to work, we say there is a *change or shift in labor supply*.
- Something that **increases** labor supply shifts the labor supply curve to the **right**
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Shifts in Labor Supply



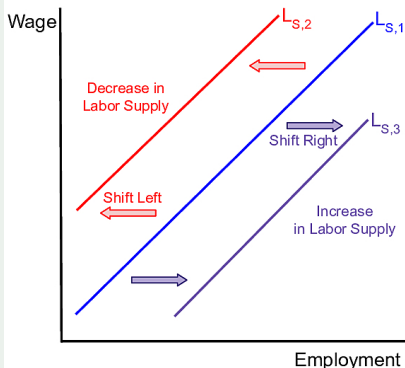
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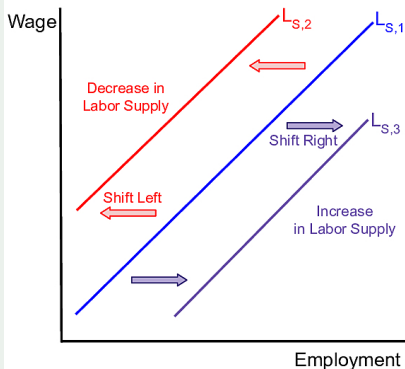
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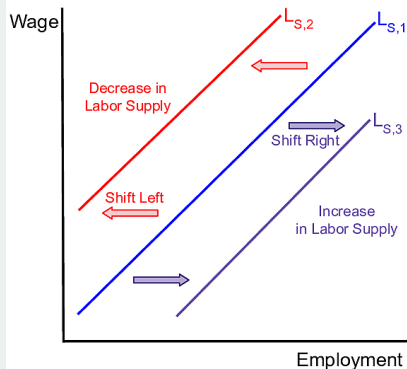
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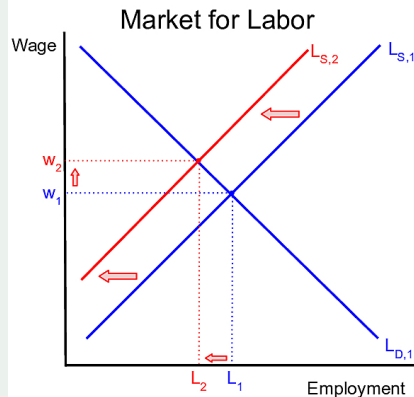
Increase in Retirements

17 / 22

Mechanism

- Suppose a healthy stock market causes more people to decide to retire
- This will **shift labor supply left**
- Equilibrium wage increases, employment decreases

Graphical Equilibrium



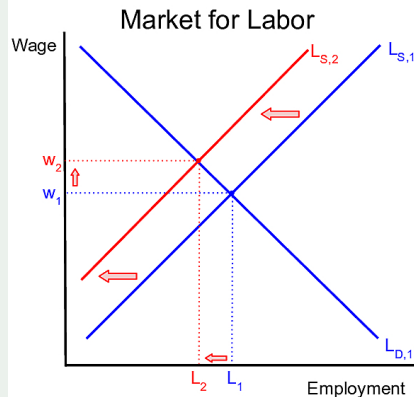
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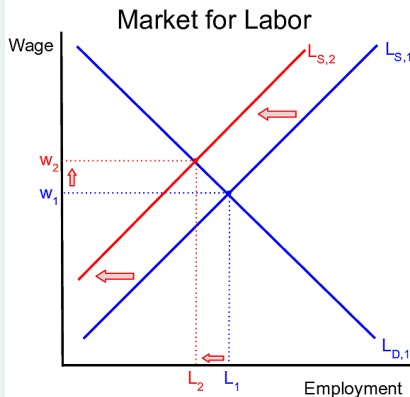
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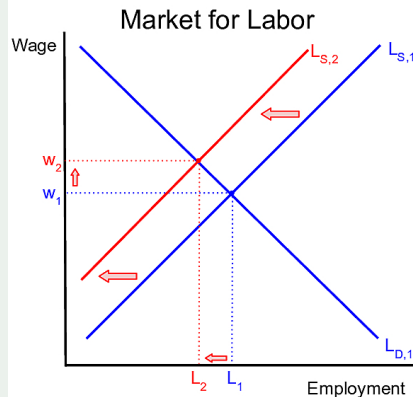
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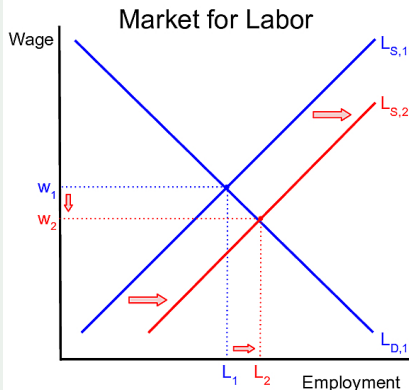
Increase in Labor Force Participation

18 / 22

Mechanism

- U.S. labor force participation rate is about 62% (2021)
- Suppose more people decide to be part of the labor force
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- Equilibrium wage decreases, employment increases

Graphical Equilibrium



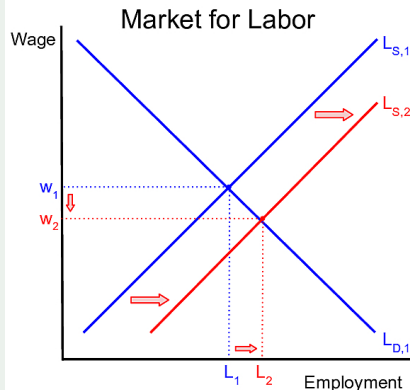
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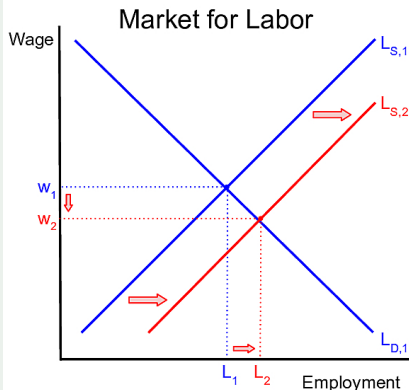
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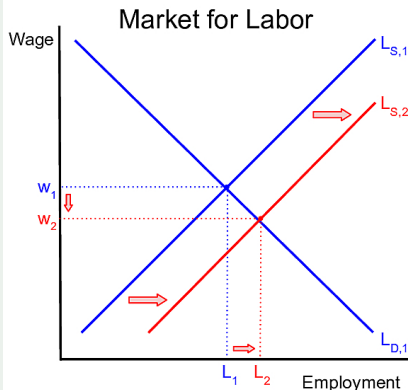
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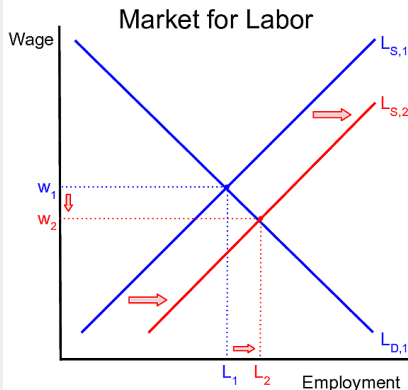
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Graphical Equilibrium



Sticky Wages

19 / 22

- Usually, wages do not quickly adjust to new equilibrium levels
- Employers are hesitant to change wages until they recognize market wages have permanently changed
- Labor contracts, policies, salaries often negotiated and changed annually
- Across the board paycuts can hurt employee morale more than layoffs
- Wages can take 3 months - 12 months to adjust to new equilibrium levels

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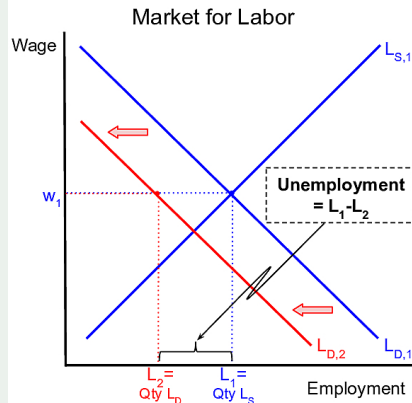
Unemployment with Sticky Wages

20 / 22

Drop in Consumer Spending

- Suppose drop in consumer confidence leads to a drop in consumer spending
- Labor is a derived demand, so **labor demand shifts to the left**
- When wage does not move to new equilibrium level, labor market surplus is created
- Labor market surplus \rightarrow unemployment

Graphical Illustration



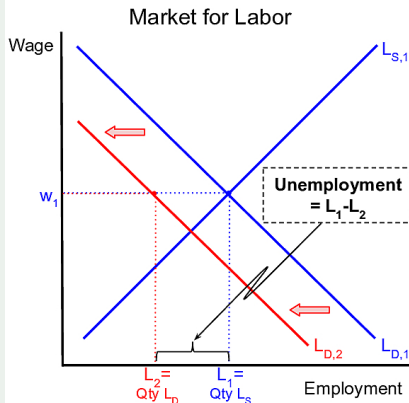
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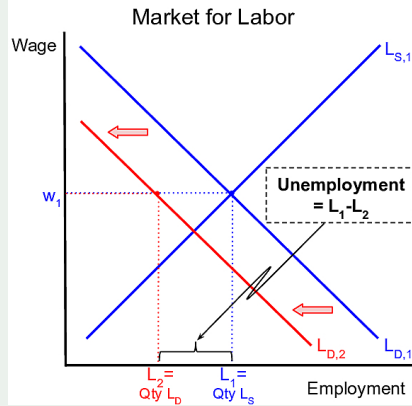
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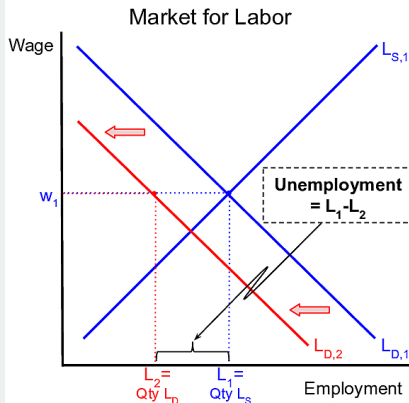
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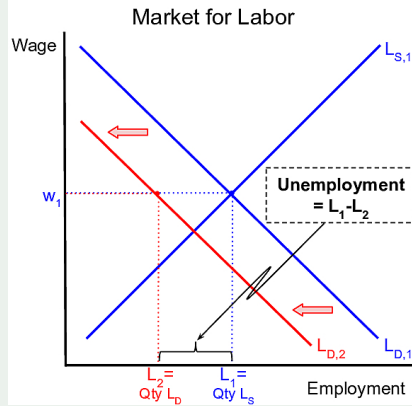
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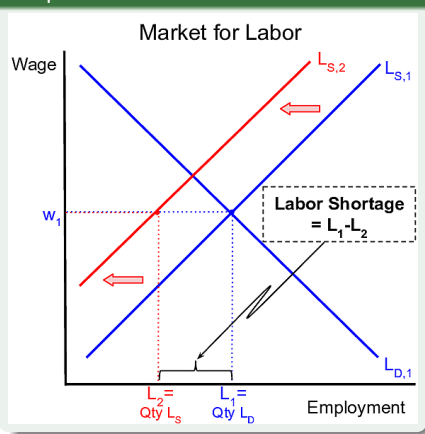
Labor Market Shortage with Sticky Wages

21 / 22

Drop in Labor Force Participation

- Following the COVID recession in 2020, labor force participation dropped from 63% to 61.5%
- Record number of job resignations in 2021:
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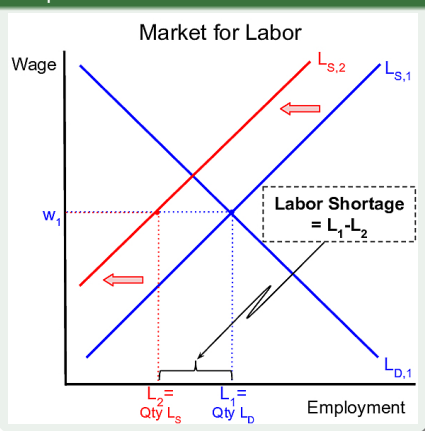
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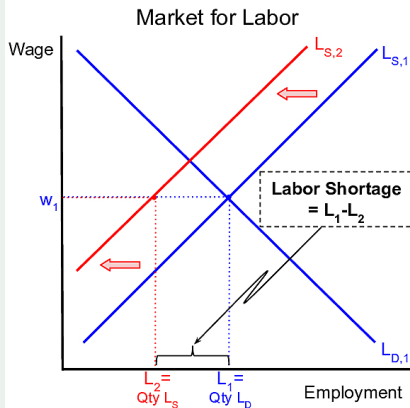
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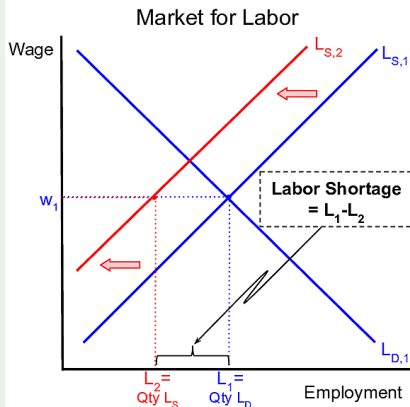
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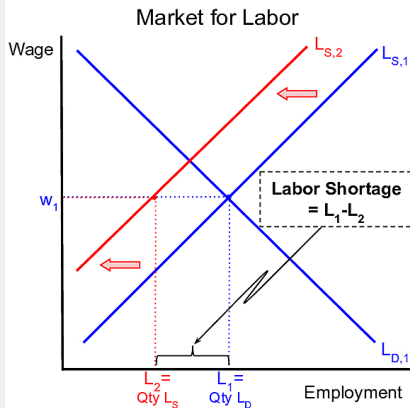
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Reading and Exercises

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