Econ 110A: Lecture 13

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UCSD, Summer Session II

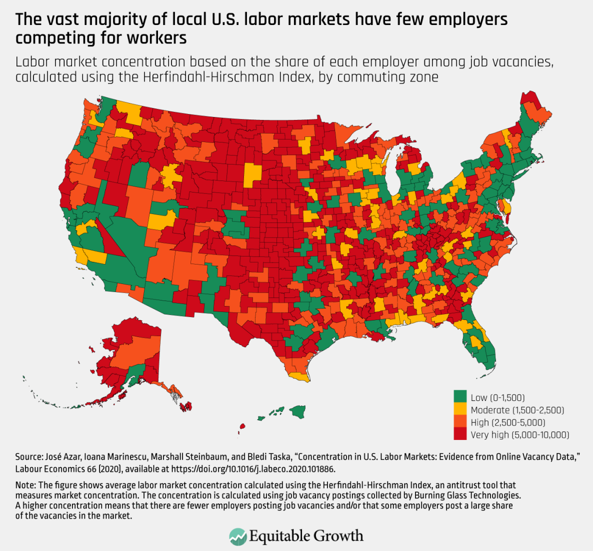
Is the Labor Market really that simple?

- Labor relationship is multiperiod.
- Market power (of employers, or worker) may be important
- Labor relationship is more than just the monetary wage payment.
- The stylized labor market we have studied should be used with extra care when considering labor market policies…
- We will think more about **monopsony**, **market structure**, **minimum wages**, **hiring** and **quitting**.

Monopsony in the Labor Market

Monopsony: a market structure where there is only one buyer.

Example in labor market: large employer relative to area population



https://equitablegrowth.org/boosting-wages-when-u-s-labor-markets-are-not-competitive/

Logic of a monopsonist

- Take labor supply curve as given

- Then choose labor level that maximizes profits. Given $w = \frac{\gamma}{1-\tau}L$

$$\max_{\{K,L\}} \pi = AK^{\alpha}L^{1-\alpha} - rK - \underbrace{\frac{\gamma}{1-\tau}L}_{=w} \cdot L$$

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- Note that this is the same as **choosing wages** that maximize profits, given the labor supply. Given $L = \frac{1-\tau}{\gamma} w$

$$\max_{\{K,w\}} \pi = AK^{\alpha} \left(\underbrace{\frac{1-\tau}{\gamma} w}_{=L} \right)^{1-\alpha} - rK - w \cdot \underbrace{\frac{1-\tau}{\gamma} w}_{=L}$$

Monopsony in the Labor Market

- Take the first case

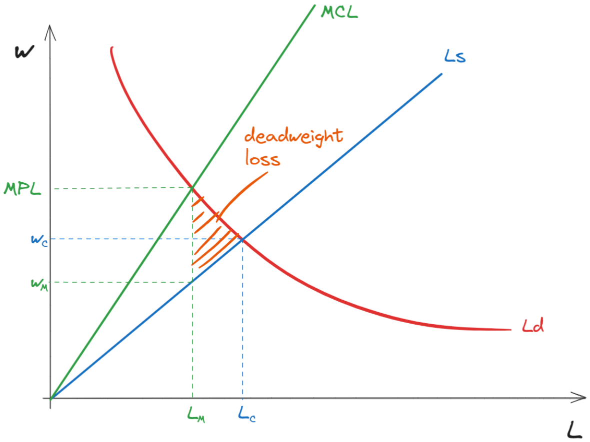
$$\max_{\{K,L\}} \pi = AK^{\alpha}L^{1-\alpha} - rK - \frac{\gamma}{1-\tau}L \cdot L$$

First order conditions:

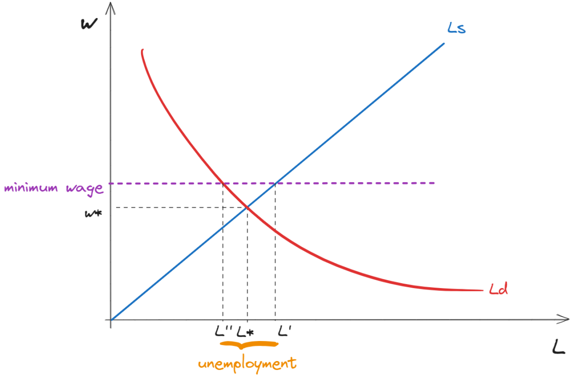
$$r = MPK$$

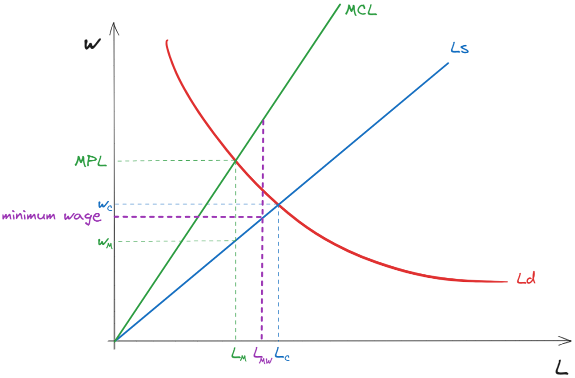
$$0 = \underbrace{(1-\alpha)A\left(\frac{K}{L}\right)^{\alpha}}_{=MPL} - 2\frac{\gamma}{1-\tau}L$$

$$MPL = 2\frac{\gamma}{1-\tau}L = \underbrace{MCL}_{\text{marginal cost of labor}}$$



The Minimum Wage and Labor Market Structure



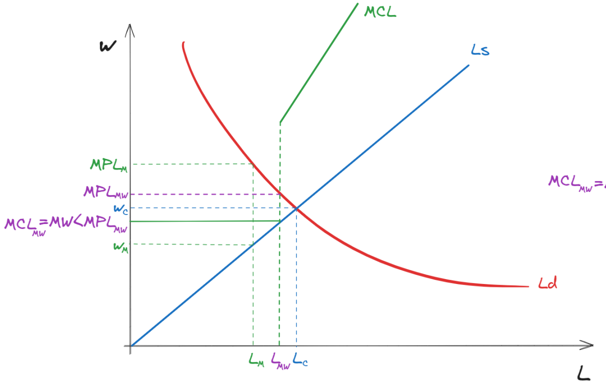


The Minimum Wage and Labor Market Structure

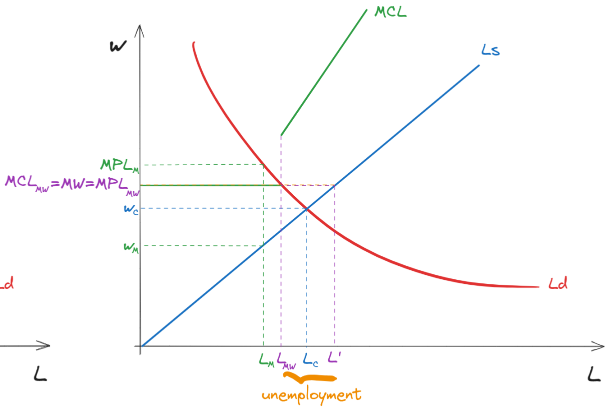
- Under perfectly competitive labor market, the minimum wage results in lower labor demand, and unemployment
- Under monopsony, the minimum wages results in higher labor supply, and lower unemployment
- **Bottom Line**: the stylized labor market we have studied should be used with extra care when thinking about labor market policies!
- **But context matters**: even under monopsony, there are limits to the minimum wage!

The Minimum Wage and Labor Market Structure

Minimum wage BELOW competitive equilibrium wage increases employment relative to the competitive equilibrium



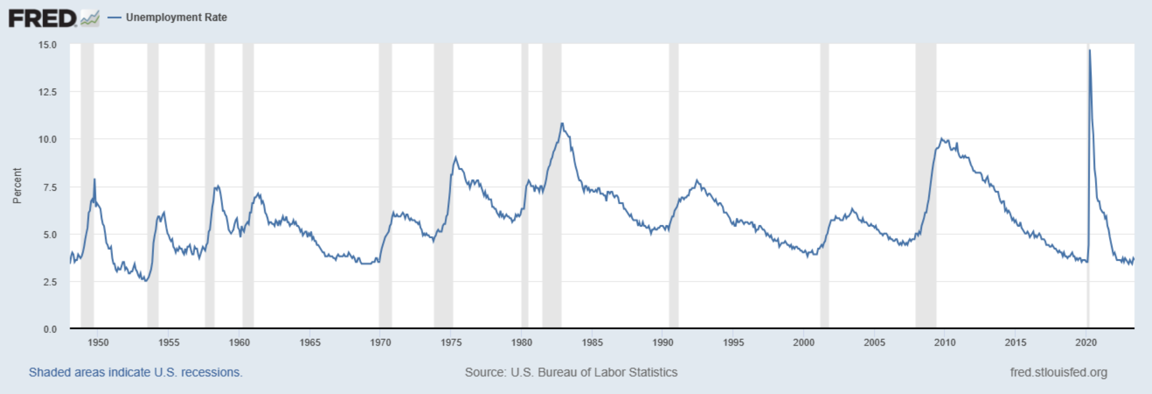
Minimum wage ABOVE competitive equilibrium wage induces unemployment relative to the competitive equilibrium



Evidence on Monopsony and Labor Markets

- This is a hotly debated topic among economists, there is no consensus and the evidence is mixed.
- When a large employer comes to a region, such as Walmart, employment and wages go up (Volpe and Boland, 2022). When a large employer such as Amazon increases wages in a region, wages in competitors go up (Derenoncourt et al, 2022). Both are consistent with the monopsony model at the regional level.
- There is increasingly a range of high-quality studies that show no negative employment effects. Higher MW are likely passed through to consumers as higher prices. (Dube, 2019).
- But most studies still find negative employment effects. These are stronger for teenagers and less educated workers, for whom it is more likely that $MW > MPL$ (Neumark and Shirley, 2022).
- Markets different over time and space. Models are stylized tools purposefully simplified to help us analyze reality. Keep that in mind! Reality is complicated. ¯_(ツ)_/¯

Long Run Unemployment



The "Bathtub" Model of Unemployment

Very simple model to explain the long-run unemployment rate

- job separation rate: $\bar{s} = \frac{\text{layoffs}}{\text{employed}}$
- job finding rate: $\bar{f} = \frac{\text{hires - quits}}{\text{unemployed}}$
- labor force: $\bar{L} = E_t + U_t$

$$\Delta U_{t+1} = \underbrace{\bar{s} \cdot E_t}_{\text{new layoffs}} - \underbrace{\bar{f} \cdot U_t}_{\text{new hires from unemployed}}$$

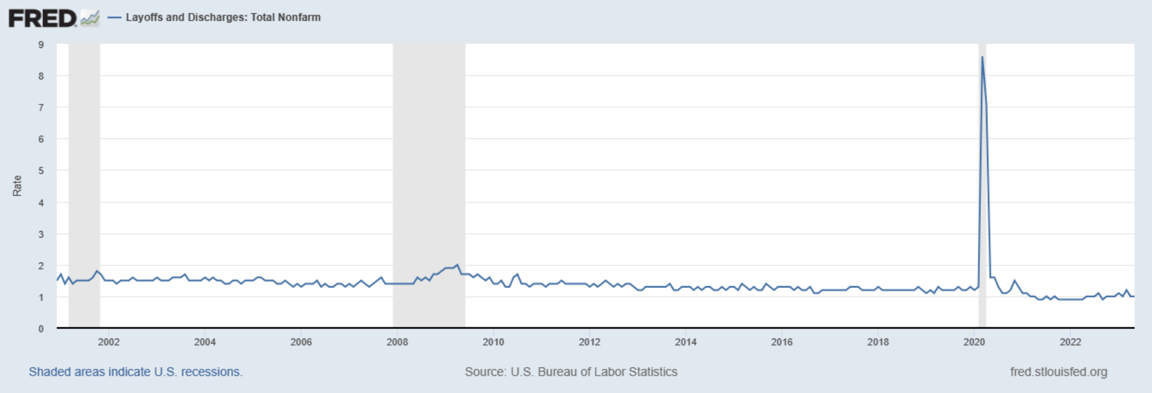
The "Bathtub" Model of Unemployment

Strategy: find the long-run equilibrium where $\Delta U_{t+1} = 0$

$$
\begin{aligned}
\Delta U^* = \bar{s} \cdot E^* - \bar{f} \cdot U^* &= 0 \\
\iff \bar{s} \cdot (\bar{L} - U^*) - \bar{f} \cdot U^* &= 0 \\
\iff U^* &= \frac{\bar{s}}{\bar{s} + \bar{f}} \bar{L} \\
\iff \frac{U^*}{\bar{L}} = u^* &= \frac{\bar{s}}{\bar{s} + \bar{f}}
\end{aligned}
$$

Job separation rate

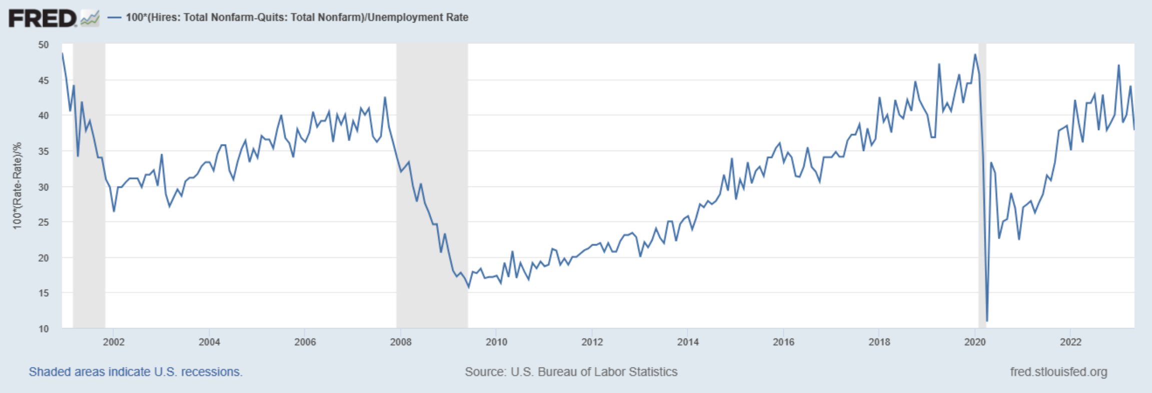
$\bar{s} \approx 1\%$



`https://fred.stlouisfed.org/series/JTSLDR#`

Job finding rate

$\bar{f} \in [20\%, 40\%]$



`https://fred.stlouisfed.org/graph/?g=17rVr`

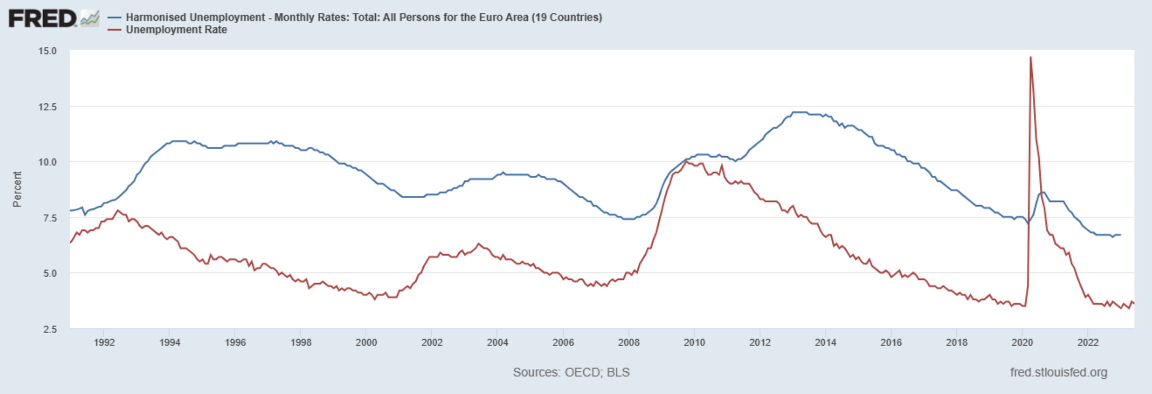
The "Bathtub" Model of Unemployment

$$u_{US} = \frac{0.01}{0.01 + 0.2} = 4.8\%, \qquad u_{US}^{A} = \frac{0.01}{0.01 + 0.4} = 2.5\%$$

Changes in labor market policies affect both separation rate and job finding rate, which makes it difficult to use this model for policy analysis

Example: suppose the government introduces a law that makes it very difficult to layoff workers, what do you think would happen to the long-run unemployment?

Long Run Unemployment: Euro Area vs U.S.



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Human Capital

Human Capital

Human capital is the stock of skills of people in the labor force.
e.g.: education, training, experience, health...

- some returns to human capital are private
- but strong externalities exist

but how much is human capital worth?

Present Discounted Value

- Suppose you have \$1,000 and the interest rate is R, how much will that \$1,000 be worth if you put that in the bank for 5 periods? we can use the rules of compounding to find the answer:

$$\text{future value} = (1+R)^5 \text{present discounted value} = (1+R)^5 \$1,000$$

Present Discounted Value

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- Conversely, suppose we knew the future value, and we wanted to know how much is $(1+R)^5\$1,000$ worth today? From the equation above, we ca derive the answer:

$$\text{present discounted value} = \frac{\text{future value}}{(1+R)^5} = \$1,000$$

Aside: Geometric Sequences

- Consider:

$$\sum_{t=0}^{T} \delta^t \cdot x = x \underbrace{\left(\delta^0 + \delta^1 + \cdots + \delta^T\right)}_{\equiv \mathbb{A}^T}, \qquad 0 < \delta < 1$$

- Now note:

Aside: Geometric Sequences

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$$\begin{aligned} \mathbb{A}^T &= (1 + \delta + \delta^2 + \cdots + \delta^T) \\ \Longleftrightarrow \quad (1-\delta)\mathbb{A}^T &= (1-\delta)(1 + \delta + \delta^2 + \cdots + \delta^T) \end{aligned}$$

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\Longleftrightarrow (1-\delta)\mathbb{A}^T &= (1 - \delta + \delta - \delta^2 + \delta^2 - \delta^3 + \delta^3 + \cdots - \delta^T + \delta^T - \delta^{T+1})
\end{aligned}$$

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\iff \mathbb{A}^T &= \frac{1 - \delta^{T+1}}{1-\delta}
\end{aligned}$$

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\iff (1-\delta)\mathbb{A}^T &= (1 - \delta^{T+1}) \\
\iff \mathbb{A}^T &= \frac{1 - \delta^{T+1}}{1 - \delta}
\end{aligned}$$

- Therefore:

$$\sum_{t=0}^{T} \delta^t \cdot x = x \cdot \frac{(1 - \delta^{T+1})}{1 - \delta}, \qquad \lim_{T\to\infty} \sum_{t=0}^{T} \delta^t \cdot x = \frac{x}{1-\delta}, \qquad 0 < \delta < 1$$

What is the PDV of Lifetime Income of US Workers

- The average American worker enters the labor force at 22 and retires at 67, so she works for 45 years.
- Average income is $\$63,000$ per year.

What is the PDV of Lifetime Income of US Workers

- The average American worker enters the labor force at 22 and retires at 67, so she works for 45 years.

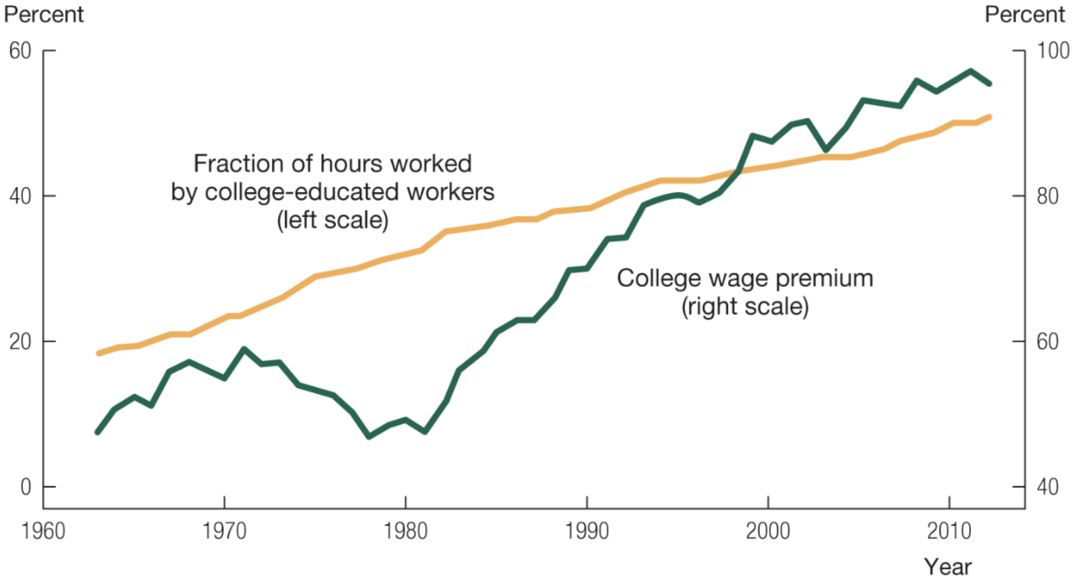
- Average income is $\$63,000$ per year.

- Ignoring growth in wages for now and considering an interest rate of $R = 3\%$, we can calculate the PDV of lifetime income for the US worker.

$$\text{present discounted value} = \$63,000 \times \frac{1 - \left(\frac{1}{1+3\%}\right)^{46}}{1 - \left(\frac{1}{1+3\%}\right)} = \$1.6 \text{ million}$$

- It is actually more than that if you consider that the economy (and wages) is growing over those 45 years!

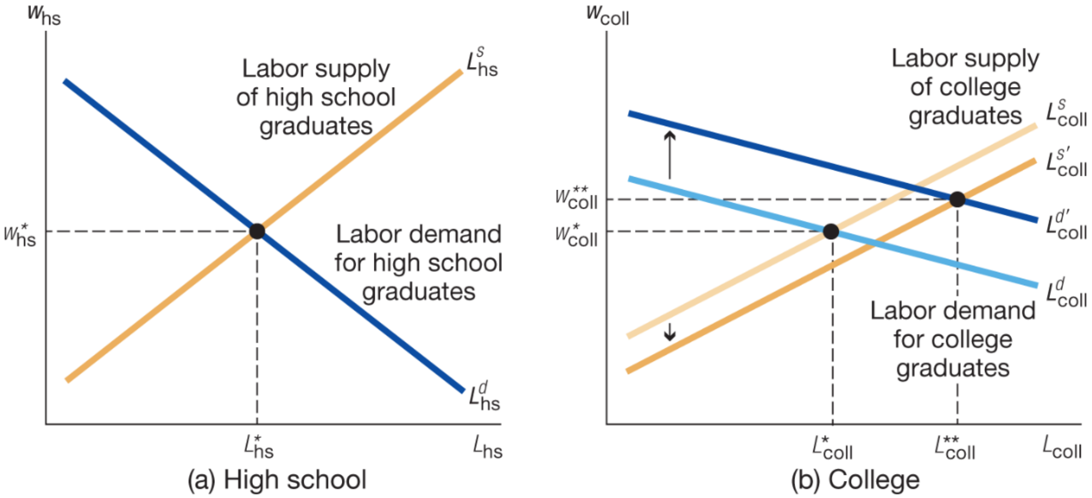
The Market for College Graduates



The Market for College Graduates

FIGURE 7.9

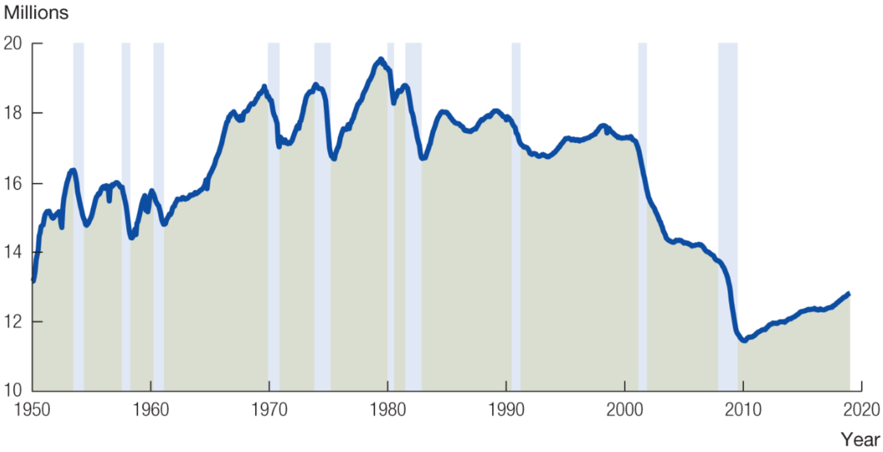
Understanding the Rising Return to Education



Skilled-Biased Technical Change

FIGURE 7.10

U.S. Employment in Manufacturing



U.S. Employment in Manufacturing

Rising Returns to Education and Labor Market

- Both the quantity of college-educated workers employed, and the college wage premium have increased. How can this be explained using our simple model of the labor market?

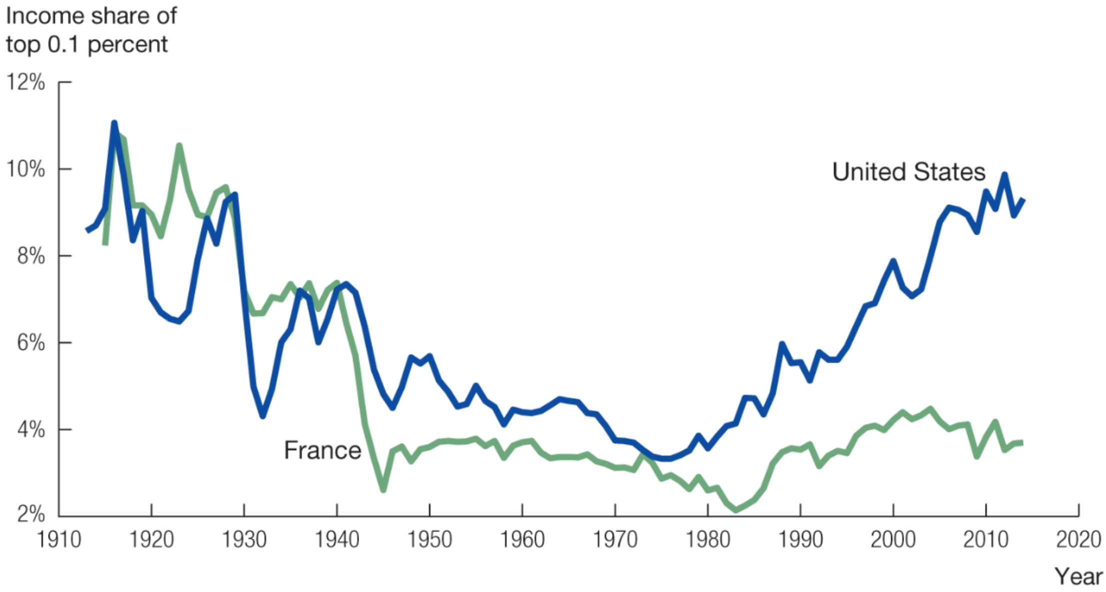
Rising Returns to Education and Labor Market

- Both the quantity of college-educated workers employed, and the college wage premium have increased. How can this be explained using our simple model of the labor market?

- **Skill-biased technological change**: the increase in demand for college graduate is due to the economy gradually switching to a production technology that requires more high-skilled workers.

- What evidence of Skill-biased technological change?
    1. Decline in Manufacturing Jobs, Increase in Professional Services
    2. Job Polarization

Skilled-Biased Technical Change and Inequality?



Skilled-Biased Technical Change and Inequality?

Economic Growth by Income Percentile