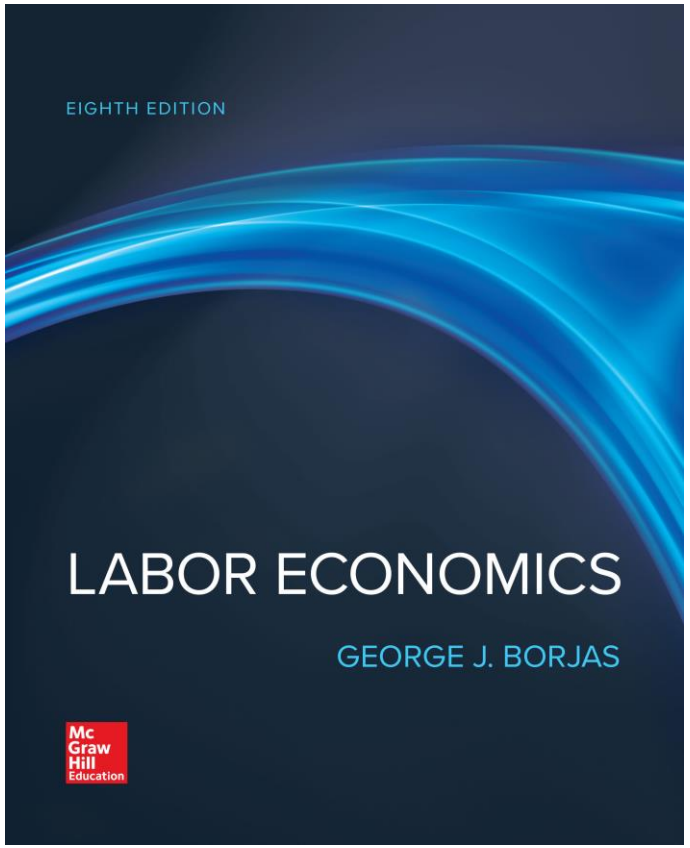
Chapter 4

Labor Market Equilibrium



"Order is not pressure which is imposed on society from without, but an equilibrium which is set up from within."

-Jose Ortega y Gasset

Introduction

Labor market equilibrium coordinates the desires of firms and workers, determining the wage and employment observed in the labor market.

Market types:

- Monopsony: one buyer of labor
- Monopoly: one seller of labor

These market structures generate unique labor market equilibria.

Equilibrium in a Single Competitive Labor Market

Competitive equilibrium occurs when supply equals demand, generating a competitive wage and employment level.

It is unlikely that the labor market is ever in an equilibrium, since supply and demand are dynamic.

The model suggests that the market is always moving toward equilibrium.

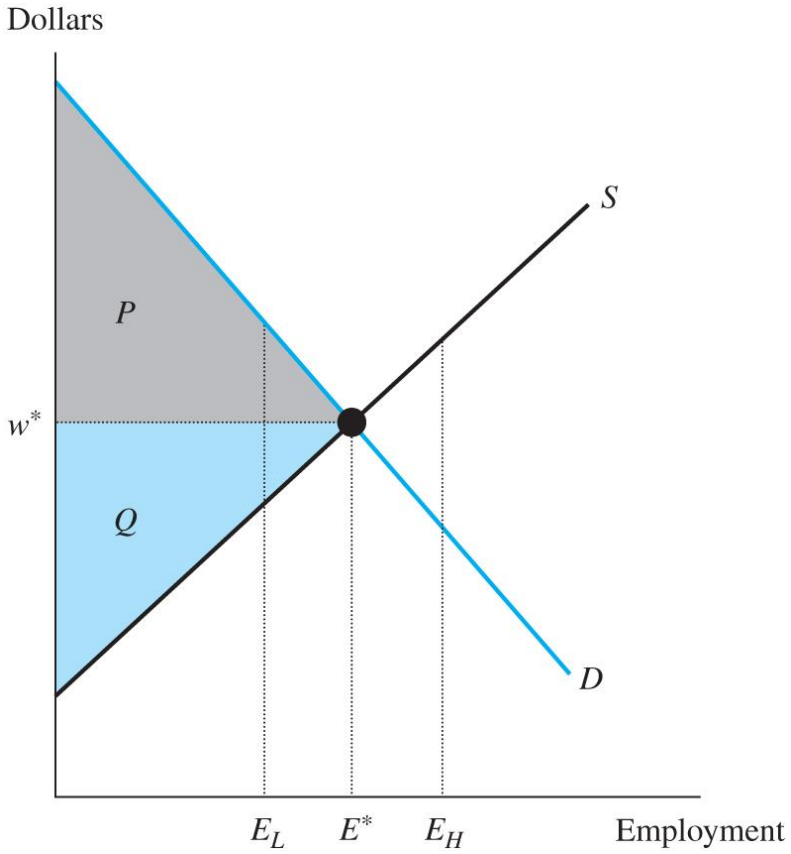
Efficiency

Pareto efficiency exists when all possible gains from trade have been exhausted.

When the state of the world is (Pareto) Efficient, to improve one person's welfare necessarily requires decreasing another person's welfare.

In policy applications, ask whether a change can make any one better off without harming anyone else. If the answer is yes, then the proposed change is said to be "Pareto-improving".

Equilibrium in a Competitive Labor Market



The labor market is in equilibrium when supply equals demand; E^* workers are employed at a wage of w^*. In equilibrium, all persons who are looking for work at the going wage can find a job. The triangle *P* gives the producer surplus; the triangle *Q* gives the worker surplus. A competitive market maximizes the value of output, or the sum $P + Q$.

Competitive Equilibrium Across Labor Markets

If workers were mobile and entry and exit of workers to the labor market was free, then there would be a single wage paid to all workers.

The allocation of workers to firms equating the wage to the value of marginal product is also the allocation that maximizes national income (this is known as allocative efficiency).

The "invisible hand" process: self-interested workers and firms accomplish a social goal that no one had in mind, i.e., allocative efficiency.

Efficiency Revisited

The "single wage" property of a competitive equilibrium has important implications for economic efficiency.

- Recall that in a competitive equilibrium the wage equals the value of marginal product of labor. As firms and workers move to the region that provides the best opportunities, they eliminate regional wage differentials. Therefore, workers of given skills have the same value of marginal product of labor in all markets.

The allocation of workers to firms that equates the value of marginal product across markets is also the sorting that leads to an efficient allocation of labor resources.

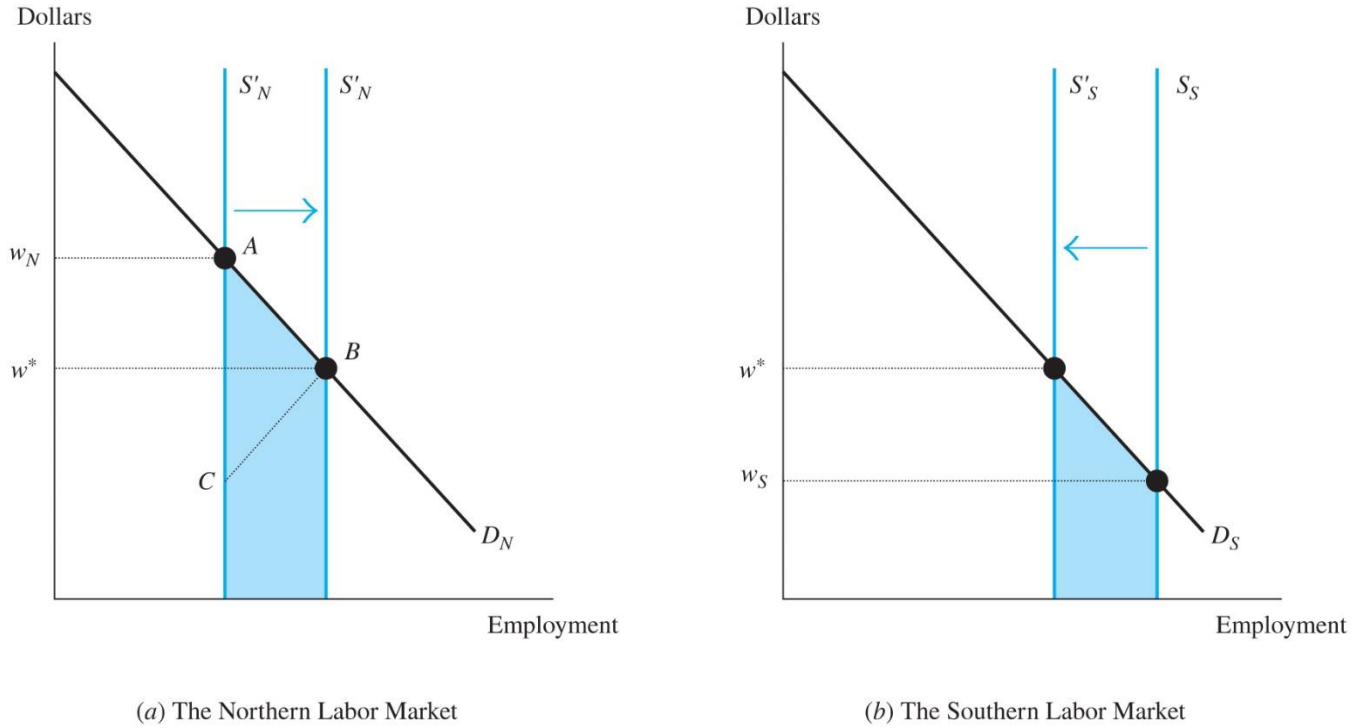
Wages and International Trade: NAFTA

NAFTA created a free trade zone in North America.

Free trade reduces the income differential between the United States and other countries in the zone, such as Mexico.

Total income of the countries in the trade zone is maximized as a result of equalized economic opportunities across the countries in the zone.

Competitive Equilibrium in Two Labor Markets Linked by Migration

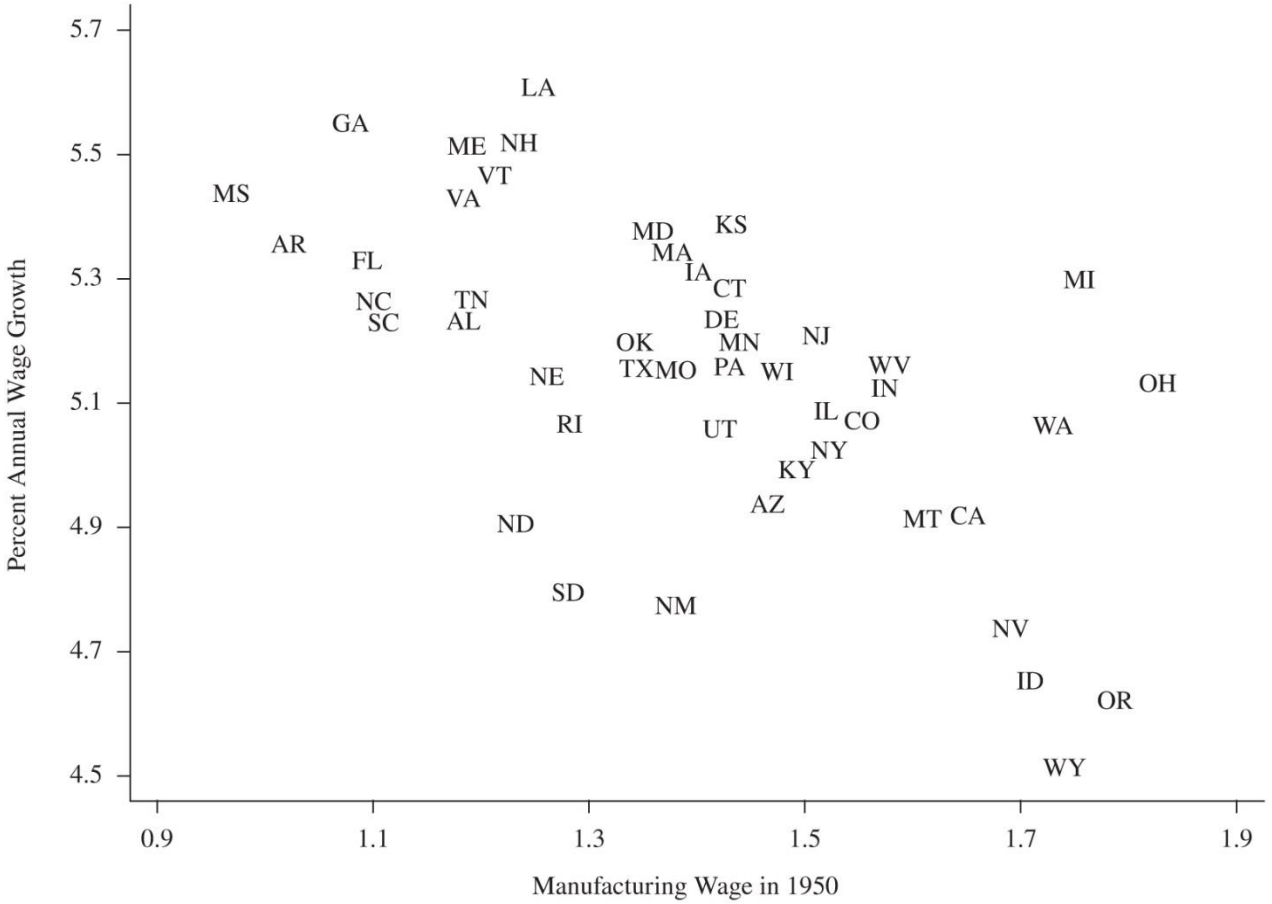


(*a*) The Northern Labor Market

(*b*) The Southern Labor Market

Suppose the wage in the northern region (w_N) exceeds the wage in the southern region (w_S). Southern workers want to move North, shifting the southern supply curve to the left and the northern supply curve to the right. In the end, wages are equated across regions at w^*.

Wage Convergence Across States



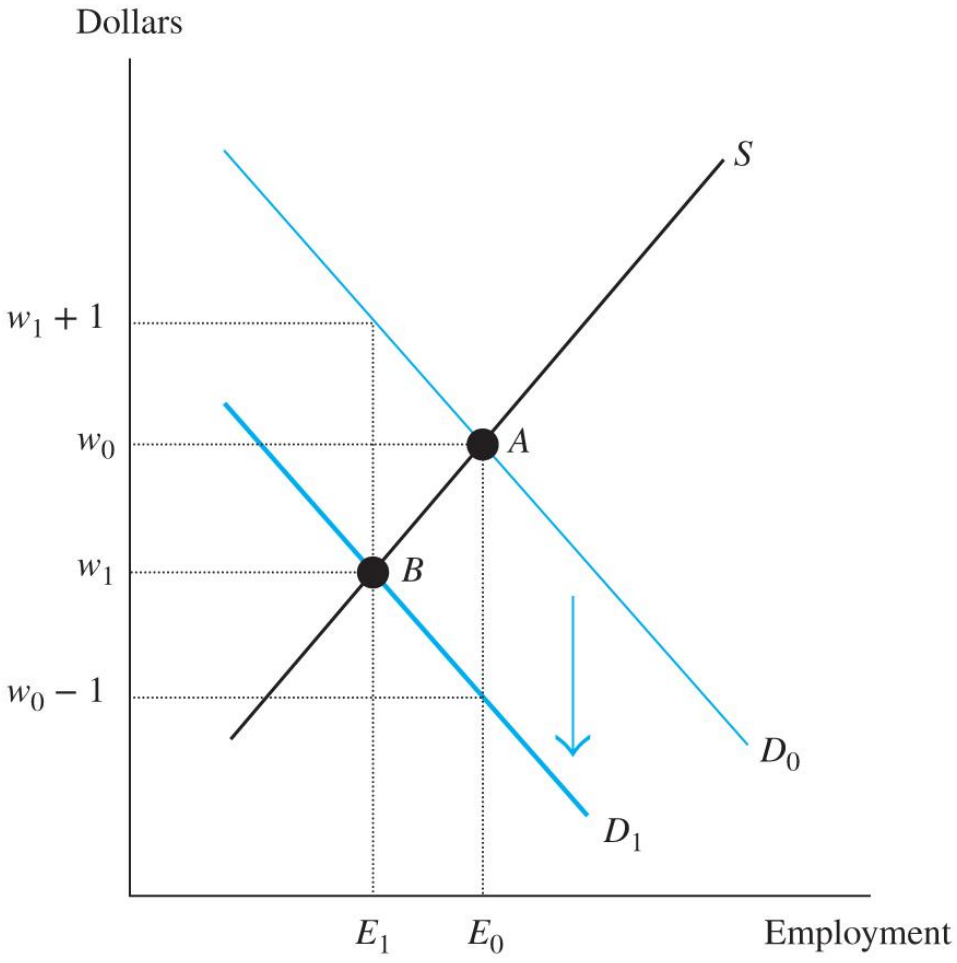
Source: Olivier Jean Blanchard and Lawrence F. Katz, "Regional Evolutions," *Brookings Papers on Economic Activity* 1 (1992): 1-61.

Payroll Taxes and Subsidies

Payroll taxes assessed on employers lead to a downward, parallel shift in the labor demand curve.

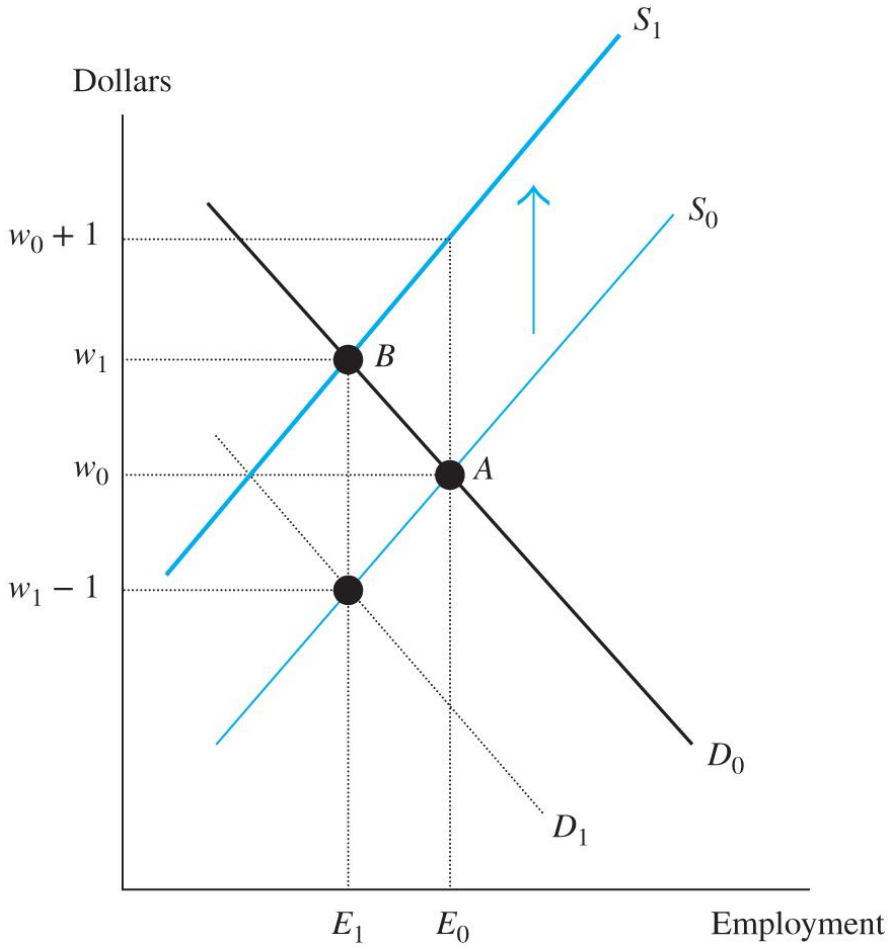
- The new demand curve shows a wedge between the amount the firm must pay to hire a worker and the amount that workers actually receive.
- Payroll taxes increase total costs of employment, so these taxes reduce employment in the economy.
- Firms and workers share the cost of payroll taxes, since the cost of hiring a worker rises and the wage received by workers declines.
- Payroll taxes result in deadweight losses.

The Impact on Payroll Tax Assessed on Firms



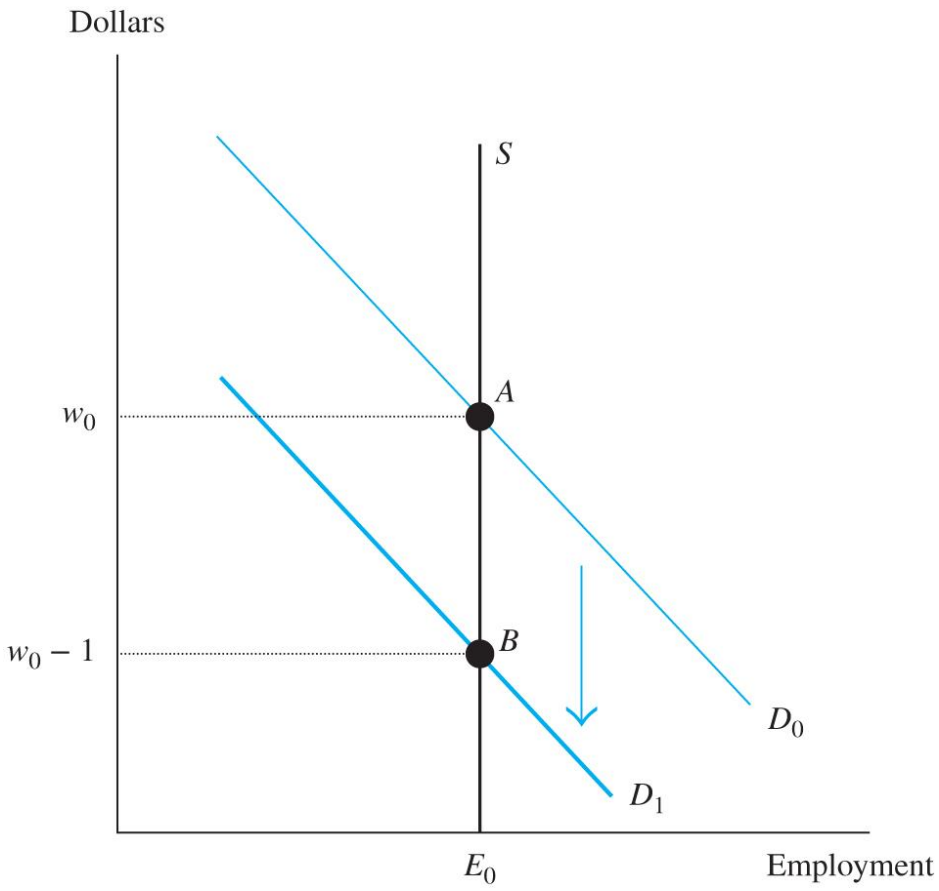
A payroll tax of $1 assessed on employers shifts down the demand curve (from D_0 to D_1). The payroll tax decreases the wage that workers receive from w_0 to w_1, and increases the cost of hiring a worker from w_0 to $w_1 + 1$.

The Impact on Payroll Tax Assessed on Workers



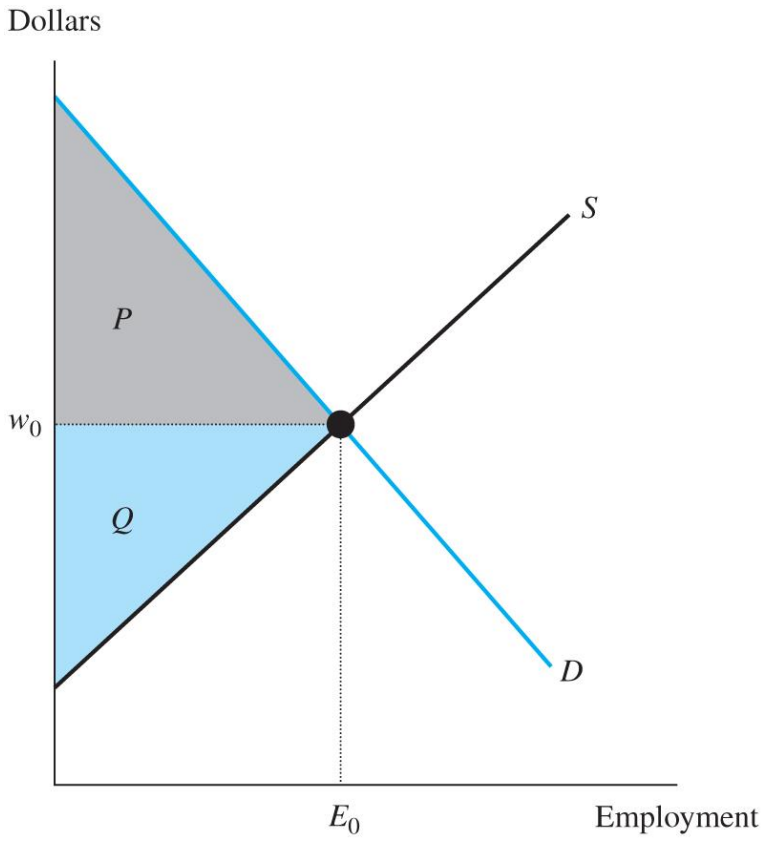
A payroll tax assessed on workers shifts the supply curve to the left (from S_0 to S_1). The payroll tax has the same impact on the equilibrium wage and employment regardless of who it is assessed on.

The Impact on Payroll Tax Put on Firms with Inelastic Supply

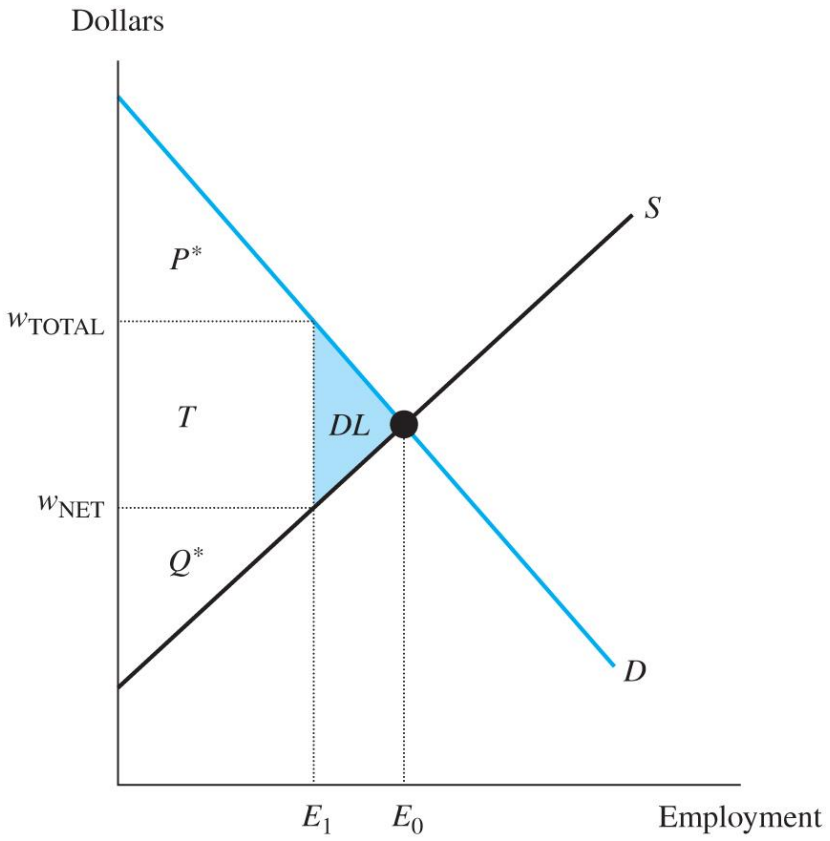


A payroll tax assessed on the firm is shifted completely to workers when the labor supply curve is perfectly inelastic. The wage is initially w_0. The $1 payroll tax shifts the demand curve to D_1, and the wage falls to $w_0 - 1$.

Deadweight Loss of a Payroll Tax



(*a*) No-Tax Equilibrium



(*b*) Payroll Tax Equilibrium

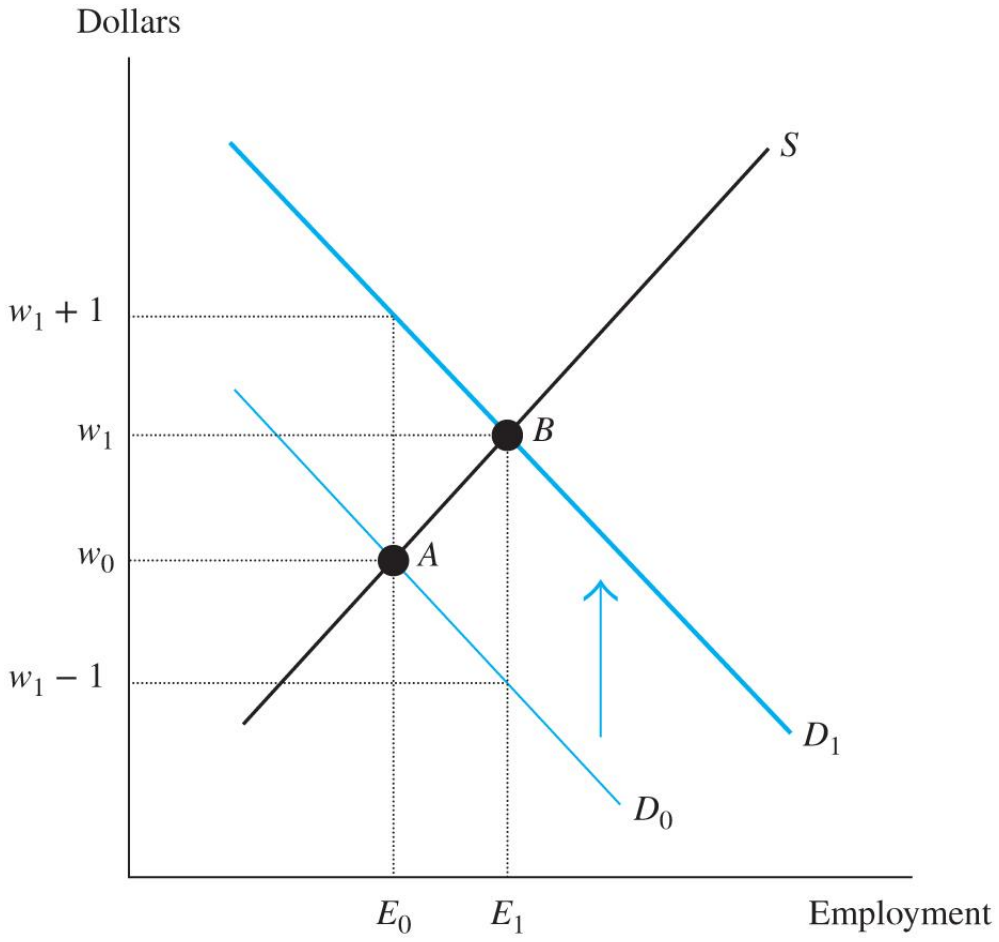
Payroll Subsidies

An employment subsidy lowers the cost of hiring for firms.

This means payroll subsidies shift the demand curve for labor to the right (up).

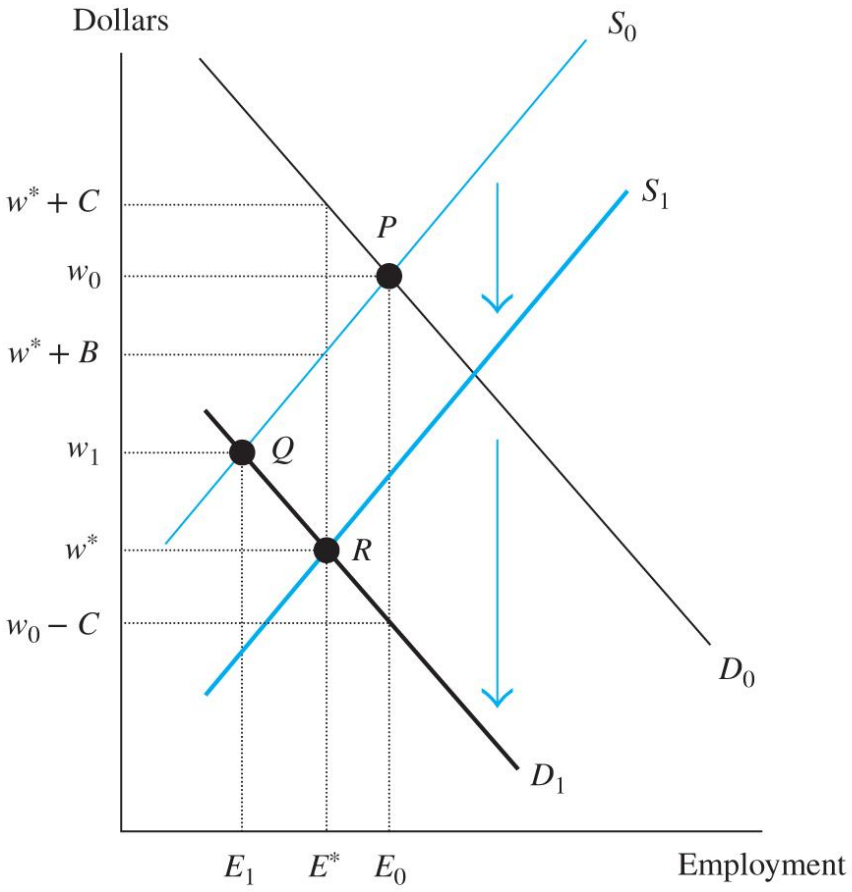
Total employment will increase as the cost of hiring has fallen.

The Impact of an Employment Subsidy

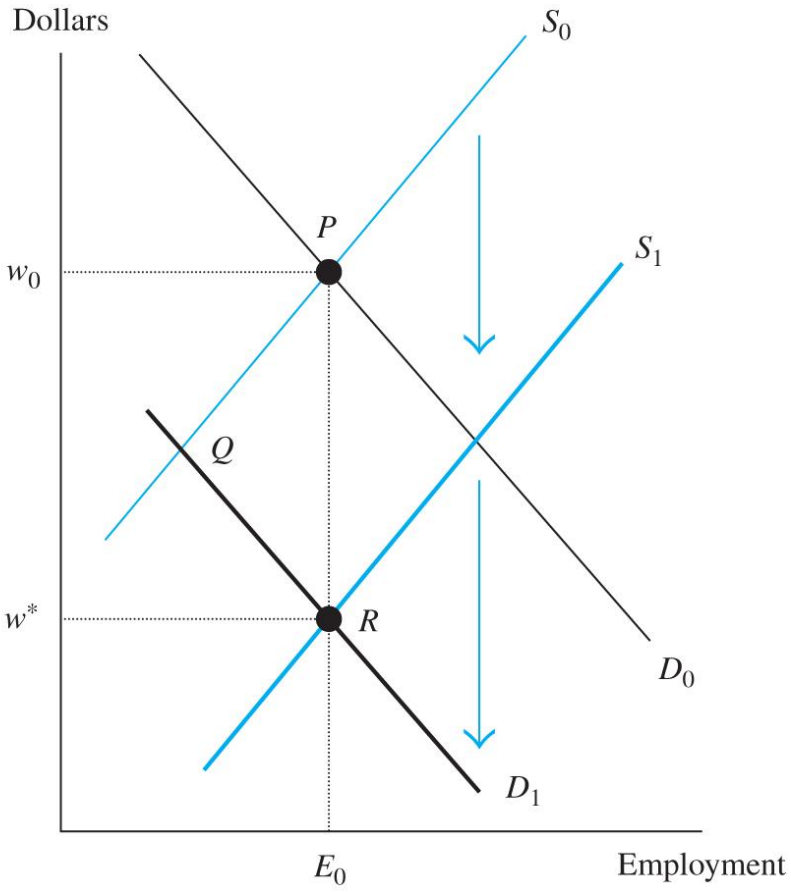


An employment subsidy of $1 per worker hired shifts up the labor demand curve, increasing employment. The wage that workers receive rises from w_0 to w_1. The wage that firms actually pay falls from w_0 to $w_1 - 1$.

The Impact of a Mandated Benefit



(*a*) Cost of Mandate Exceeds Worker's Valuation



(*b*) Cost of Mandate Equals Worker's Valuation

Immigration

As immigrants enter the labor market, the labor supply curve shifts to the right.

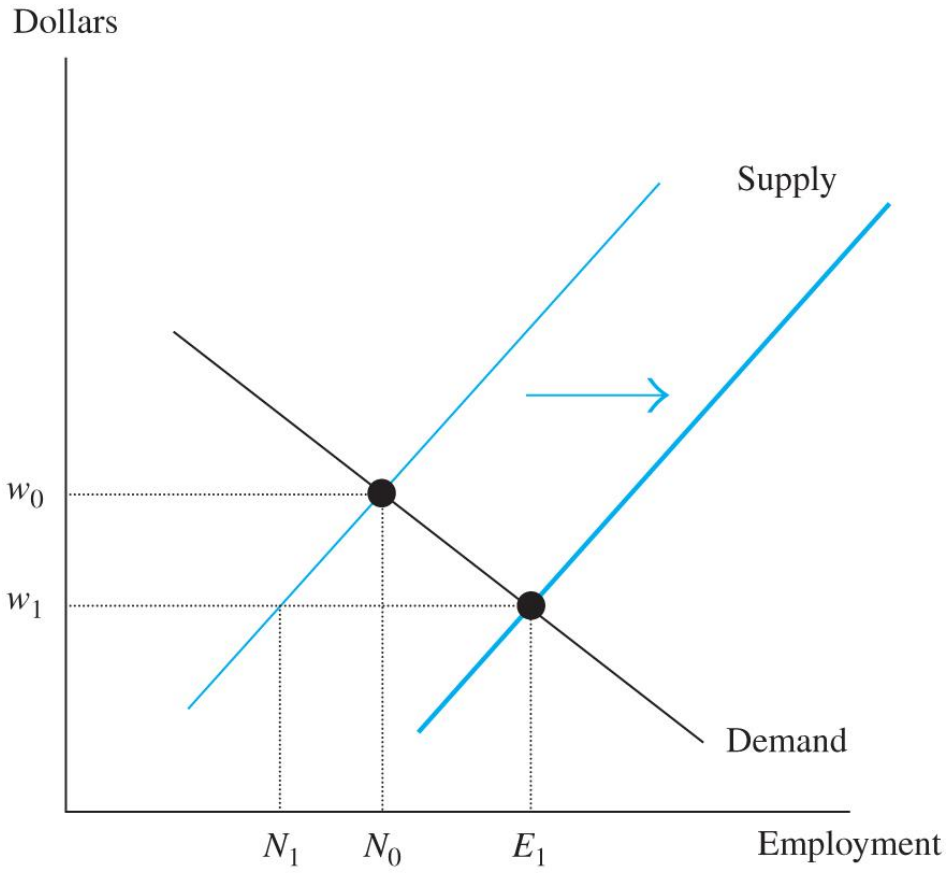
- Total employment increases.
- Equilibrium wage decreases.

Effect on Native-Born Workers

Immigration reduces the wages and employment of similarly-skilled native-born workers, but native-born workers may be able to increase their productivity by specializing in tasks better suited to their skills.

Competing native workers will have lower wages; complementary native workers will have higher wages.

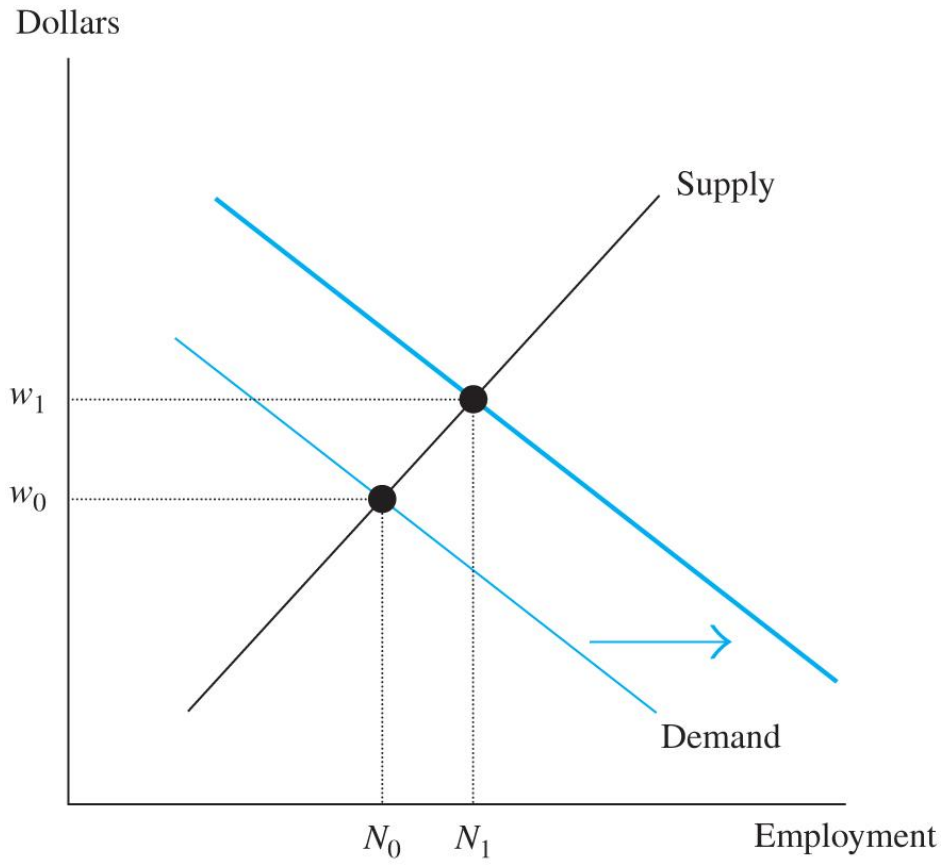
The Short-Run Impact of Immigration When Immigrants and Natives Are Perfect Substitutes



(*a*) Perfect Substitutes

As immigrants and natives are perfect substitutes, the two groups are competing in the same labor market. Immigration shifts out the labor supply curve. As a result, the wage falls from w_0 to w_1, and total employment increases from N_0 to E_1. At the lower wage, the number of natives who work declines from N_0 to N_1.

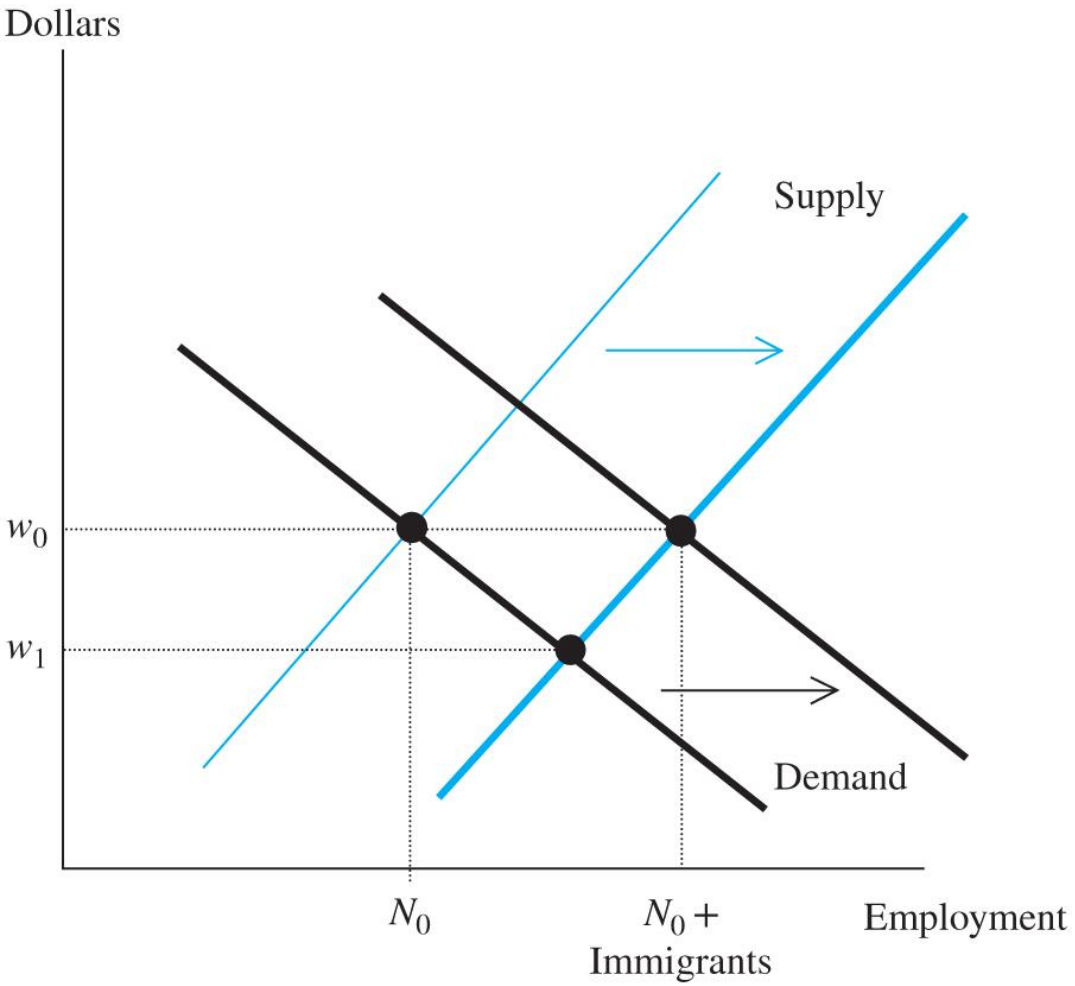
The Short-Run Impact of Immigration when Immigrants and Natives are Complements



(*b*) Complements

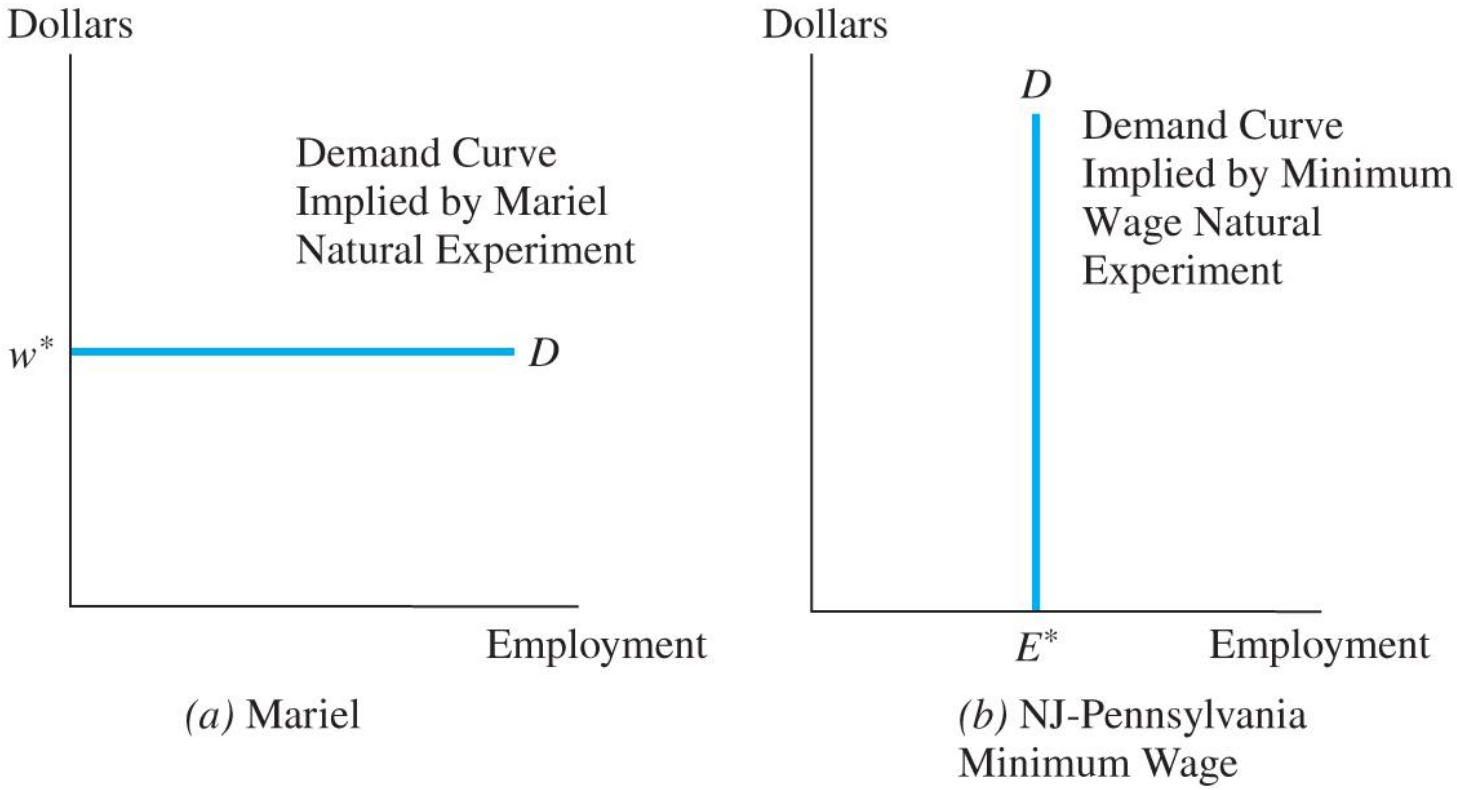
If immigrants and natives are complements, they do not compete in the same labor market. The labor market here denotes the supply and demand for native workers. Immigration makes natives more productive, shifting out the labor demand curve. This leads to a higher native wage and to an increase in native employment.

The Long-Run Impact of Immigration When Immigrants and Natives Are Perfect Substitutes



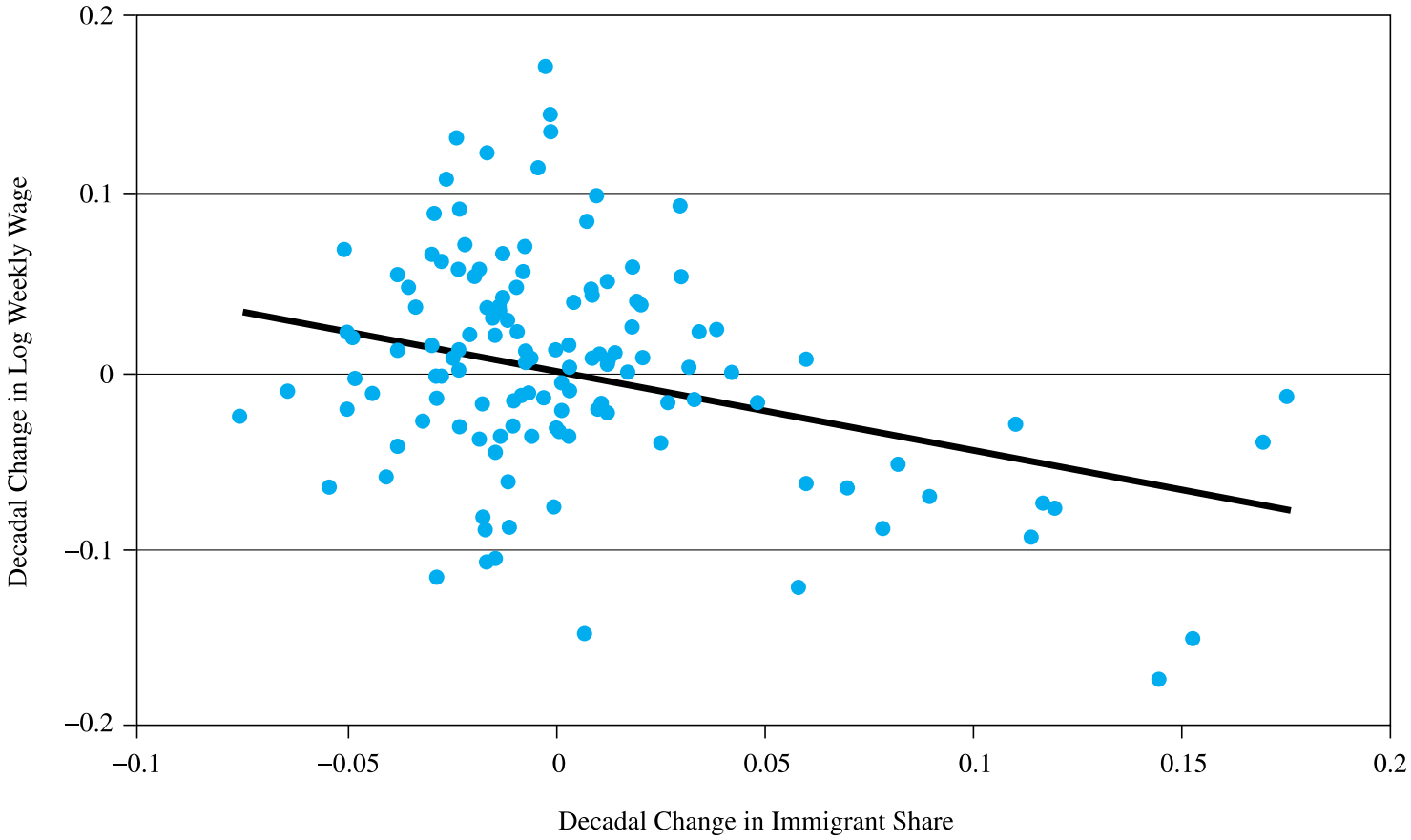
Immigration initially shifts out the labor supply curve so the wage falls from w_0 to w_1. Over time, capital expands as firms take advantage of the cheaper workforce, shifting out the labor demand curve and restoring the original wage and level of native employment.

The Short-Run Labor Demand Curve Implied by Different Natural Experiments



(*a*) The analysis of data resulting from the Mariel natural experiment implies that increased immigration does not affect the wage, so that the short-run labor demand curve is perfectly elastic. (*b*) The analysis of data resulting from the NJ-Pennsylvania minimum wage natural experiment implies that an increase in the minimum wage does not affect employment, so that the short-run labor demand curve is perfectly inelastic.

Scatter Diagram Relating Wages and Immigration for Native Skill Groups



Policy Application: Environmental Disasters and the Labor Market

Hurricanes generate exogenous economic shocks that affect labor market conditions.

Can use data to estimate difference-in-difference models that examine the economic impact on affected Florida counties relative to unaffected counties.

Next slide data: 19 hurricanes that hit Florida between 1988 and 2005.

Changes in Employment and Wages in Florida Counties Hit by Hurricanes

	Percent change in employment	Percent change in earnings
1. Effect of category 1-3 hurricane on county directly hit	-1.5	+1.3
2. Effect of category 4-5 hurricane on county directly hit	-4.5	+4.4
3. Effect of category 1-3 hurricane on neighboring county	+0.2	-4.5
4. Effect of Category 4-5 hurricane in neighboring county	+0.8	-3.3

Source: Ariel R. Belasen and Solomon W. Polachek, "How Disasters Affect Local Labor Markets: The Effects of Hurricanes in Florida," *Journal of Human Resources*, forthcoming 2009, Table 4.

Policy Application: Environmental Disasters and the Labor Market

How does the theory of labor market equilibrium gain support from this data?

- Labor supply decreases in counties directly hit, and more so in the more-affected counties. This increases wages and lowers employment.

- Labor supply increases in neighboring counties. This decreases wages and increases employment.

The Cobweb Model

Two assumptions of the cobweb model:

- Time is needed to produce skilled workers.
- Persons decide to become skilled workers by looking at conditions in the labor market at the time they enter school.

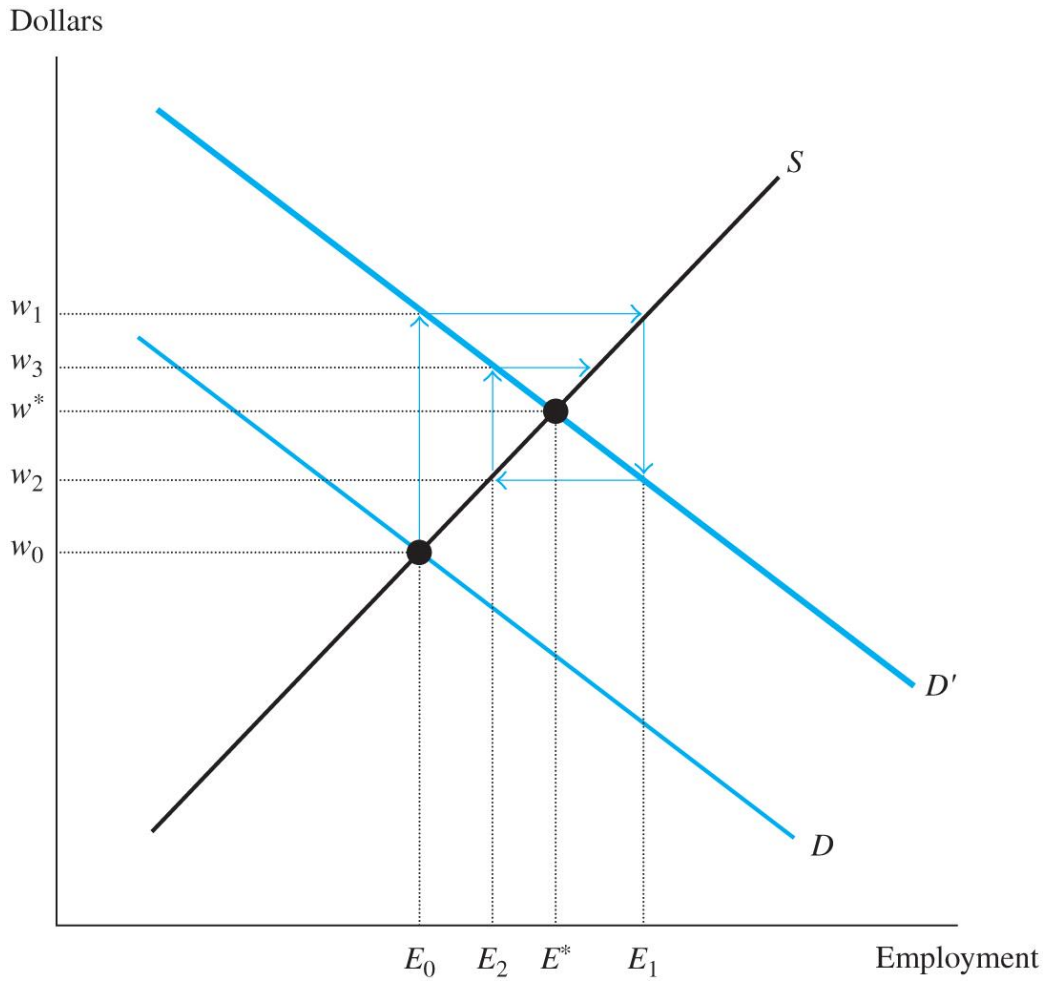
A "cobweb" pattern forms around the equilibrium.

The cobweb pattern arises when people are misinformed.

The model assumes naïve workers who do not form rational expectations.

Rational expectations are formed if workers correctly perceive the future and understand the economic forces at work.

The Cobweb Model in the Market for New Engineers



The initial equilibrium wage in the engineering market is w_0. The demand for engineers shifts to *D′*, and the wage will eventually increase to *w**. Because new engineers are not produced instantaneously and because students might misjudge future opportunities in the market, a cobweb is created as the market adjusts to the increase in demand.

Noncompetitive Labor Markets: Monopsony

Monopsony market exists when a firm is the only buyer of labor.

Monopsonists must increase wages to attract more workers.

Two types of monopsonist firms:

- Perfectly discriminating
- Nondiscriminating

Perfectly Discriminating Monopsonist

Discriminating monopsonists are able to hire different workers at different wages.

To maximize firm surplus (profits), a perfectly discriminating monopsonist "perfectly discriminates" by paying each worker his or her reservation wage.

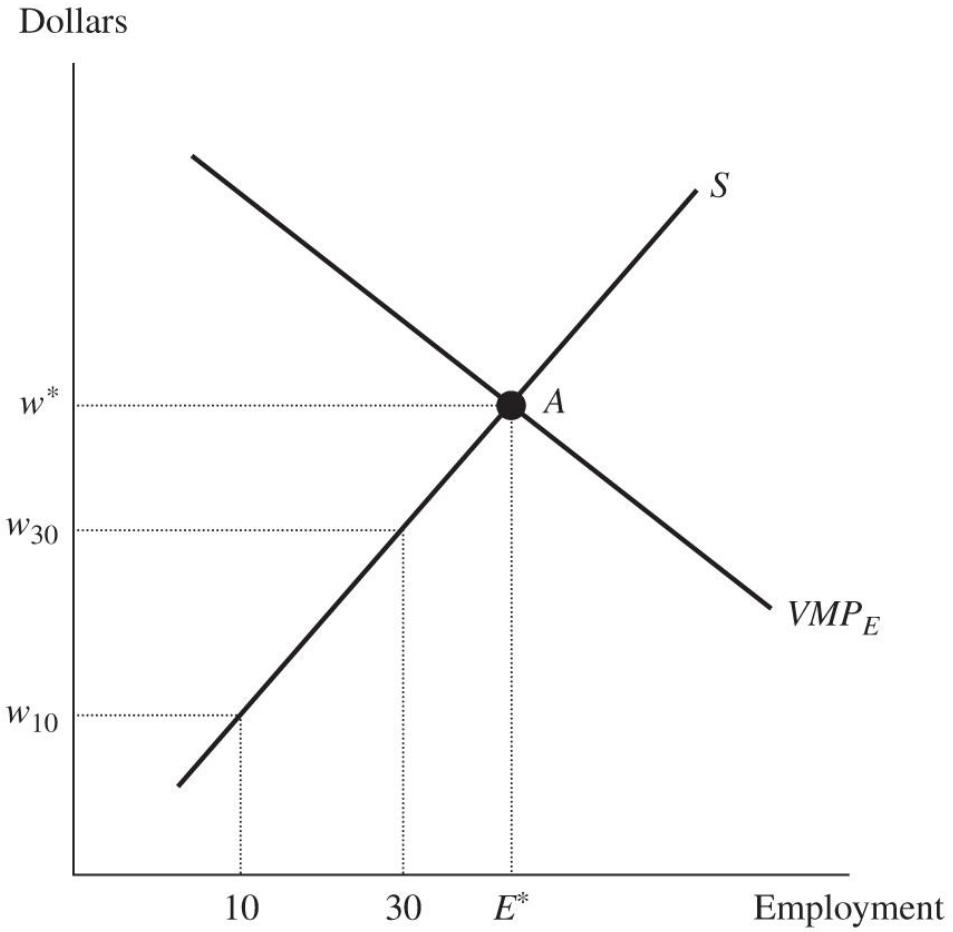
Nondiscriminating Monopsonist

Must pay all workers the same wage, regardless of each worker's reservation wage.

Must raise the wage of all workers when attempting to attract more workers.

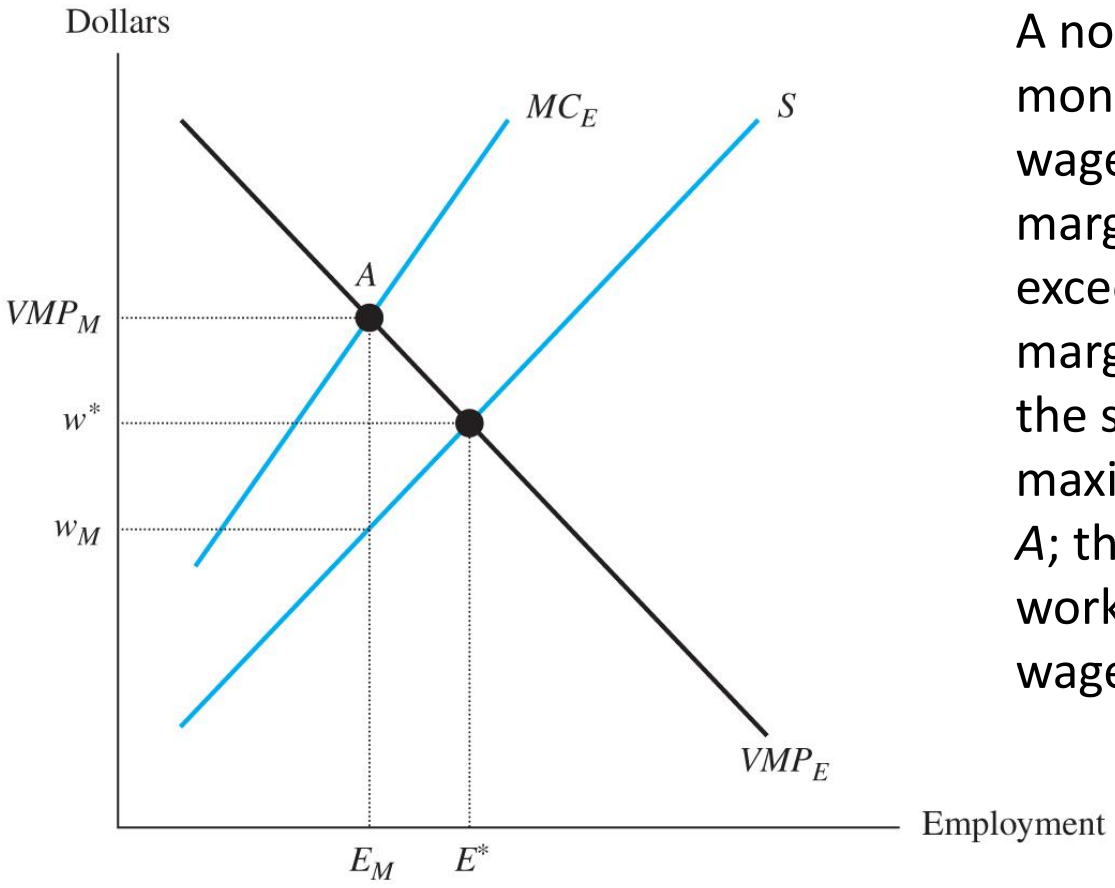
Employs fewer workers than would be employed if the market were competitive.

The Hiring Decision of a Perfectly Discriminating Monopsonist



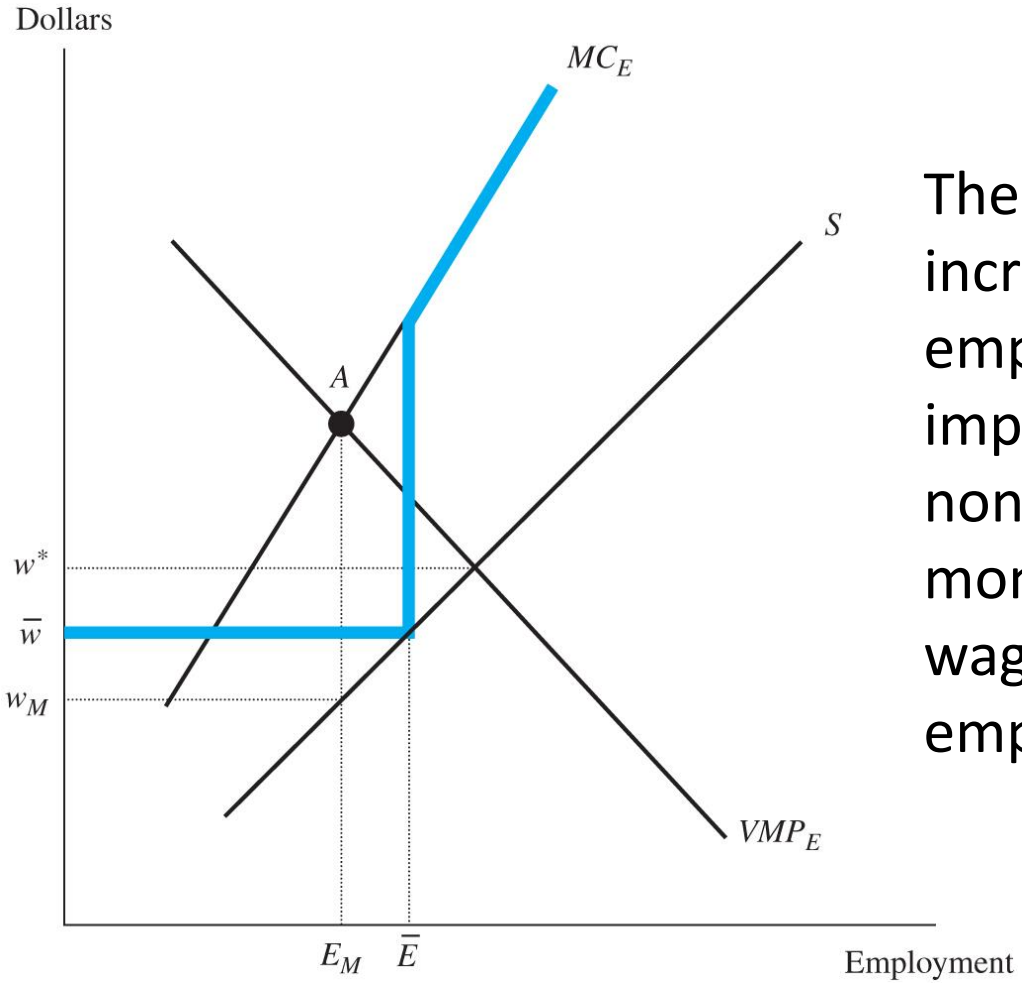
A perfectly discriminating monopsonist faces an upward-sloping labor supply curve and can hire different workers at different wages. Therefore the labor supply curve gives the marginal cost of hiring. Profit maximization occurs at point *A*. The monopsonist hires the same number of workers as a competitive market, but each worker is paid his or her reservation wage.

The Hiring Decision of a Nondiscriminating Monopsonist



A nondiscriminating monopsonist pays the same wage to all workers. The marginal cost of hiring exceeds the wage, and the marginal cost curve lies above the supply curve. Profit maximization occurs at point *A*; the monopsonist hires E_M workers and pays them all a wage of w_M.

The Impact of the Minimum Wage on a Nondiscriminating Monopsonist



The minimum wage may increase both wages and employment when imposed on a nondiscriminating monopsonist. A minimum wage set at $\bar{w}$ increases employment to $\bar{E}$.