Public Affairs 856
Trade, Competition, and Governance in a Global Economy
Lectures 25
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UW Madison
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Outline

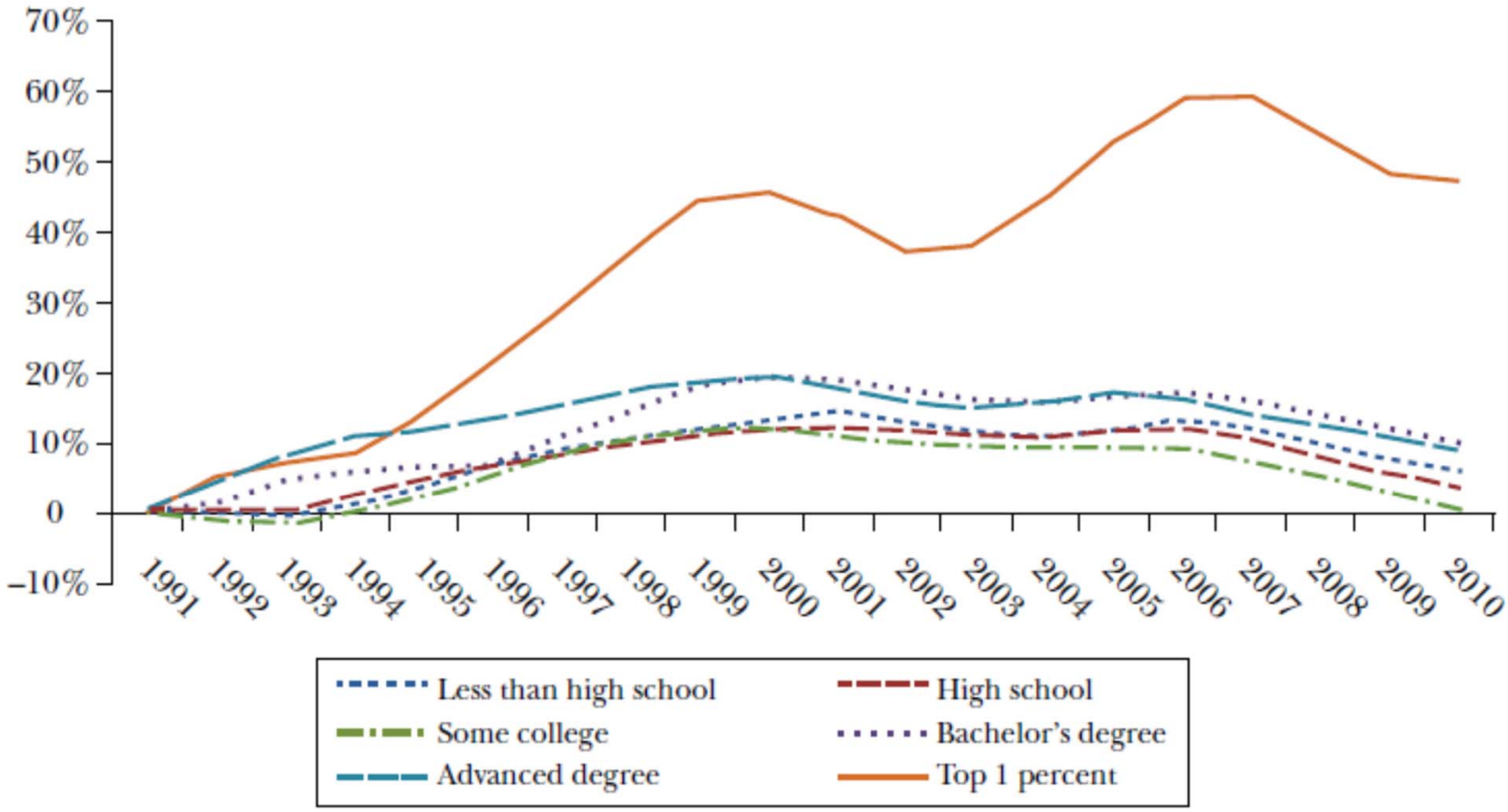
- Inequality
- China effect
- Offshoring/Outsourcing
- Labor standards

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Inequality

Figure 1

Changes in U.S. Real Income, Working Adults, by Education and for Top 1 Percent



Haskel, Lawrence, Leamer, Slaughter (2012)

earnings. To preview our results, we then work through four main findings: First, there is only mixed evidence that trade in goods, intermediates, and services has been raising inequality between more- and less-skilled workers. Second, it is more possible, although far from proven, that globalization has been boosting the real and relative earnings of superstars. The usual trade-in-goods mechanisms probably have not done this. But other globalization channels—such as the combination of greater tradability of services and larger market sizes abroad—may be playing an important role. Third, seeing this possible role requires expanding standard Heckscher–Ohlin trade models, partly by adding insights of more recent research with heterogeneous firms and workers. Finally, our expanded trade framework offers new insights on the sobering fact of pervasive real-income declines for the large majority of Americans in the past decade. We believe that the connections between globalization, technology, and wages have become much more important during the last 10–15 years.

China

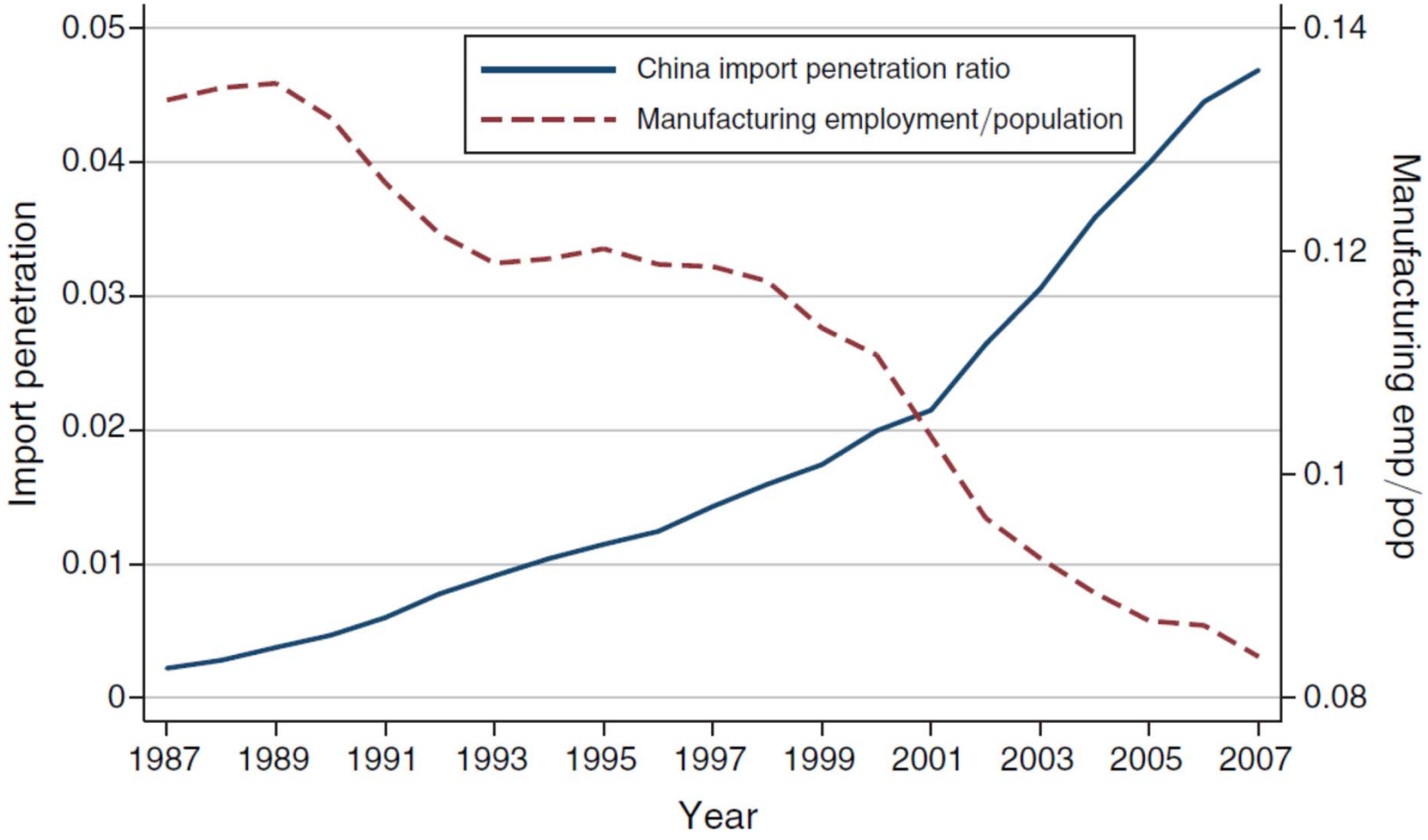


FIGURE 1. IMPORT PENETRATION RATIO FOR US IMPORTS FROM CHINA (*left scale*), AND SHARE OF US WORKING-AGE POPULATION EMPLOYED IN MANUFACTURING (*right scale*)

China

TABLE 1—VALUE OF TRADE WITH CHINA FOR THE US AND OTHER SELECTED HIGH-INCOME COUNTRIES AND VALUE OF IMPORTS FROM ALL OTHER SOURCE COUNTRIES, 1991/1992–2007

	I. Trade with China (in billions 2007 US$)		II. Imports from other countries (in billions 2007 US$)		
	Imports from China (1)	Exports to China (2)	Imports from other low-inc. (3)	Imports from Mexico/ CAFTA (4)	Imports from rest of world (5)
Panel A. United States					
1991/1992	26.3	10.3	7.7	38.5	322.4
2000	121.6	23.0	22.8	151.6	650.0
2007	330.0	57.4	45.4	183.0	763.1
Growth 1991–2007	1,156%	456%	491%	375%	137%
Panel B. Eight other developed countries					
1991/1992	28.2	26.6	9.2	2.8	723.6
2000	94.3	68.2	13.7	5.3	822.6
2007	262.8	196.9	31.0	11.6	1329.8
Growth 1991–2007	832%	639%	236%	316%	84%

Notes: Trade data is reported for the years 1991, 2000, and 2007, except for exports to China which are first available in 1992. The set of "other developed countries" in panel B comprises Australia, Denmark, Finland, Germany, Japan, New Zealand, Spain, and Switzerland. Column 3 covers imports from all countries that have been classified as low income by the World Bank in 1989, except for China. Column 4 covers imports from Mexico and the Central American and Carribean countries covered by the CAFTA-DR. Column 5 covers imports from all other countries (primarily from developed countries).

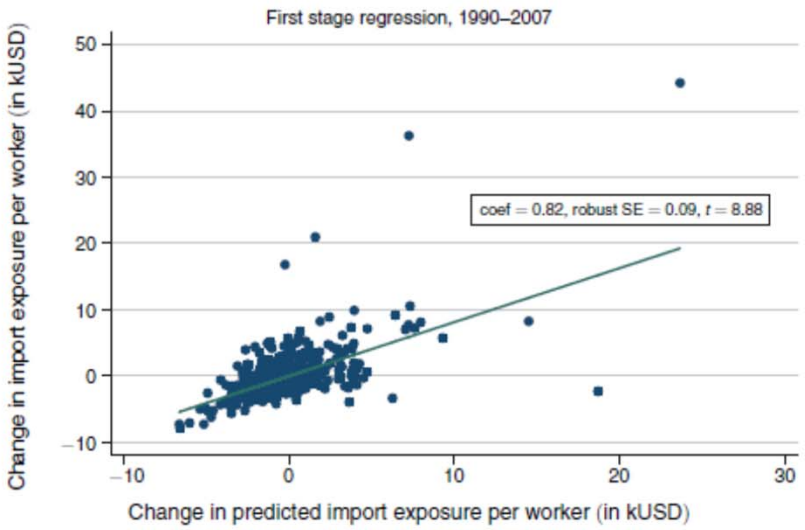
Table 2 presents initial estimates of the relationship between Chinese import exposure and US manufacturing employment. Using the full sample of 722 CZs and weighting each observation by start of period CZ population, we fit models of the following form:

$$\Delta L_{it}^{m} = \gamma_t + \beta_1 \Delta IPW_{uit} + \mathbf{X}_{it}' \beta_2 + e_{it}, \tag{5}$$

where ΔL_{it}^{m} is the decadal change in the manufacturing employment share of the working-age population in commuting zone i. When estimating this model for

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Panel A. 2SLS first stage regression, full sample



Panel B. OLS reduced form regression, full sample

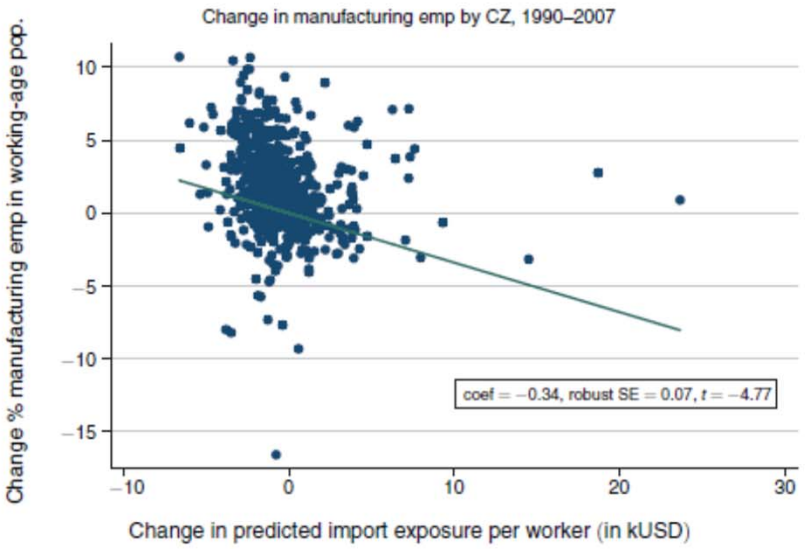


FIGURE 2. CHANGE IN IMPORT EXPOSURE PER WORKER AND DECLINE OF MANUFACTURING EMPLOYMENT: ADDED VARIABLE PLOTS OF FIRST STAGE AND REDUCED FORM ESTIMATES

Notes: $N = 722$. The added variable plots control for the start of period share of employment in manufacturing industries. Regression models are weighted by start of period CZ share of national population.

TABLE 2—IMPORTS FROM CHINA AND CHANGE OF MANUFACTURING EMPLOYMENT IN CZs, 1970–2007: 2SLS ESTIMATES

Dependent variable: 10 × annual change in manufacturing emp/working-age pop (in % pts)

	I. 1990–2007			II. 1970–1990 (pre-exposure)		
	1990–2000 (1)	2000–2007 (2)	1990–2007 (3)	1970–1980 (4)	1980–1990 (5)	1970–1990 (6)
(Δ current period imports from China to US)/worker	−0.89*** (0.18)	−0.72*** (0.06)	−0.75*** (0.07)			
(Δ future period imports from China to US)/worker				0.43*** (0.15)	−0.13 (0.13)	0.15 (0.09)

Notes: $N = 722$, except $N = 1{,}444$ in stacked first difference models of columns 3 and 6. The variable "future period imports" is defined as the average of the growth of a CZ's import exposure during the periods 1990–2000 and 2000–2007. All regressions include a constant and the models in columns 3 and 6 include a time dummy. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period CZ share of national population.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

TABLE 3—IMPORTS FROM CHINA AND CHANGE OF MANUFACTURING EMPLOYMENT IN CZs, 1990–2007: 2SLS ESTIMATES

Dependent variable: 10 × annual change in manufacturing emp/working-age pop (in % pts)

	I. 1990–2007 stacked first differences					
	(1)	(2)	(3)	(4)	(5)	(6)
(Δ imports from China to US)/ worker	−0.746*** (0.068)	−0.610*** (0.094)	−0.538*** (0.091)	−0.508*** (0.081)	−0.562*** (0.096)	−0.596*** (0.099)
Percentage of employment in manufacturing$_{-1}$		−0.035 (0.022)	−0.052*** (0.020)	−0.061*** (0.017)	−0.056*** (0.016)	−0.040*** (0.013)
Percentage of college-educated population$_{-1}$				−0.008 (0.016)		0.013 (0.012)
Percentage of foreign-born population$_{-1}$				−0.007 (0.008)		0.030*** (0.011)
Percentage of employment among women$_{-1}$				−0.054** (0.025)		−0.006 (0.024)
Percentage of employment in routine occupations$_{-1}$					−0.230*** (0.063)	−0.245*** (0.064)
Average offshorability index of occupations$_{-1}$					0.244 (0.252)	−0.059 (0.237)
Census division dummies	No	No	Yes	Yes	Yes	Yes
	II. 2SLS first stage estimates					
(Δ imports from China to OTH)/ worker	0.792*** (0.079)	0.664*** (0.086)	0.652*** (0.090)	0.635*** (0.090)	0.638*** (0.087)	0.631*** (0.087)
R^2	0.54	0.57	0.58	0.58	0.58	0.58

Notes: $N = 1{,}444$ (722 commuting zones × 2 time periods). All regressions include a constant and a dummy for the 2000–2007 period. First stage estimates in panel II also include the control variables that are indicated in the corresponding columns of panel I. Routine occupations are defined such that they account for 1/3 of US employment in 1980. The offshorability index variable is standardized to mean of 0 and standard deviation of 10 in 1980. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period CZ share of national population.

TABLE 4—IMPORTS FROM CHINA AND CHANGE OF WORKING-AGE POPULATION IN CZ, 1990–2007: 2SLS ESTIMATES

Dependent variables: Ten-year equivalent changes in log population counts (in log pts)

	I. By education level			II. By age group		
	All (1)	College (2)	Noncollege (3)	Age 16–34 (4)	Age 35–49 (5)	Age 50–64 (6)
Panel A. No census division dummies or other controls						
(Δ imports from China to US)/worker	−1.031**	−0.360	−1.097**	−1.299	−0.615	−1.127***
	(0.503)	(0.660)	(0.488)	(0.826)	(0.572)	(0.422)
R^2	—	0.03	0.00	0.17	0.59	0.22
Panel B. Controlling for census division dummies						
(Δ imports from China to US)/worker	−0.355	0.147	−0.240	−0.408	−0.045	−0.549
	(0.513)	(0.619)	(0.519)	(0.953)	(0.474)	(0.450)
R^2	0.36	0.29	0.45	0.42	0.68	0.46
Panel C. Full controls						
(Δ imports from China to US)/worker	−0.050	−0.026	−0.047	−0.138	0.367	−0.138
	(0.746)	(0.685)	(0.823)	(1.190)	(0.560)	(0.651)
R^2	0.42	0.35	0.52	0.44	0.75	0.60

Notes: $N = 1{,}444$ (722 CZs × two time periods). All regressions include a constant and a dummy for the 2000–2007 period. Models in panel B and C also include census division dummies while panel C adds the full vector of control variables from column 6 of Table 3. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period commuting zone share of national population.

TABLE 5—IMPORTS FROM CHINA AND EMPLOYMENT STATUS OF WORKING-AGE POPULATION WITHIN CZs, 1990–2007: 2SLS ESTIMATES

Dependent variables: Ten-year equivalent changes in log population counts and population shares by employment status

	Mfg emp	Non-mfg emp	Unemp	NILF	SSDI receipt
	(1)	(2)	(3)	(4)	(5)
Panel A. 100 × log change in population counts					
(Δ imports from China to US)/worker	−4.231***	−0.274	4.921***	2.058*	1.466***
	(1.047)	(0.651)	(1.128)	(1.080)	(0.557)
Panel B. Change in population shares					
All education levels					
(Δ imports from China to US)/worker	−0.596***	−0.178	0.221***	0.553***	0.076***
	(0.099)	(0.137)	(0.058)	(0.150)	(0.028)
College education					
(Δ imports from China to US)/worker	−0.592***	0.168	0.119***	0.304***	—
	(0.125)	(0.122)	(0.039)	(0.113)	
No college education					
(Δ imports from China to US)/worker	−0.581***	−0.531***	0.282***	0.831***	—
	(0.095)	(0.203)	(0.085)	(0.211)	

Notes: N = 1,444 (722 CZs × two time periods). All statistics are based on working age individuals (age 16 to 64). The effect of import exposure on the overall employment/population ratio can be computed as the sum of the coefficients for manufacturing and nonmanufacturing employment; this effect is highly statistically significant ($p \leq 0.01$) in the full sample and in all reported subsamples. All regressions include the full vector of control variables from column 6 of Table 3. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period CZ share of national population.

TABLE 6—IMPORTS FROM CHINA AND WAGE CHANGES WITHIN CZS, 1990–2007: 2SLS ESTIMATES

Dependent variable: Ten-year equivalent change in average log weekly wage (in log pts)

	All workers (1)	Males (2)	Females (3)
Panel A. All education levels			
(Δ imports from China to US)/worker	−0.759***	−0.892***	−0.614***
	(0.253)	(0.294)	(0.237)
R^2	0.56	0.44	0.69
Panel B. College education			
(Δ imports from China to US)/worker	−0.757**	−0.991***	−0.525*
	(0.308)	(0.374)	(0.279)
R^2	0.52	0.39	0.63
Panel C. No college education			
(Δ imports from China to US)/worker	−0.814***	−0.703***	−1.116***
	(0.236)	(0.250)	(0.278)
R^2	0.52	0.45	0.59

Notes: $N = 1{,}444$ (722 CZs × two time periods). All regressions include the full vector of control variables from column 6 of Table 3. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period CZ share of national population.

Offshoring of Goods and Services

1. A Model of Offshoring
2. The Gains from Offshoring
3. The Politics and Future of Offshoring

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Introduction

- The provision of a service or the production of various parts of a good in different countries that are then used or assembled into a final good in another location is called **foreign outsourcing** or, more simply, **offshoring**.
- Offshoring is trade in *intermediate inputs*.
- Offshoring is similar to immigration in that U.S. firms are able to employ foreign workers, even though those workers do not have to leave their home countries.

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SIDE BAR

"Foreign Outsourcing" Versus "Offshoring"

- The term "offshoring" is sometimes used to refer to a company moving some of its operations overseas but retaining ownership of those operations.
- The examples of Intel, Mattel, and Dell suggest there is a gray spectrum to this definition.
- In this chapter, we will not worry about the distinction between "offshoring" and "foreign outsourcing" and will use the term "offshoring" whenever the components of a good or service are produced in several countries, regardless of who owns the plants that provide the components or services.

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Introduction

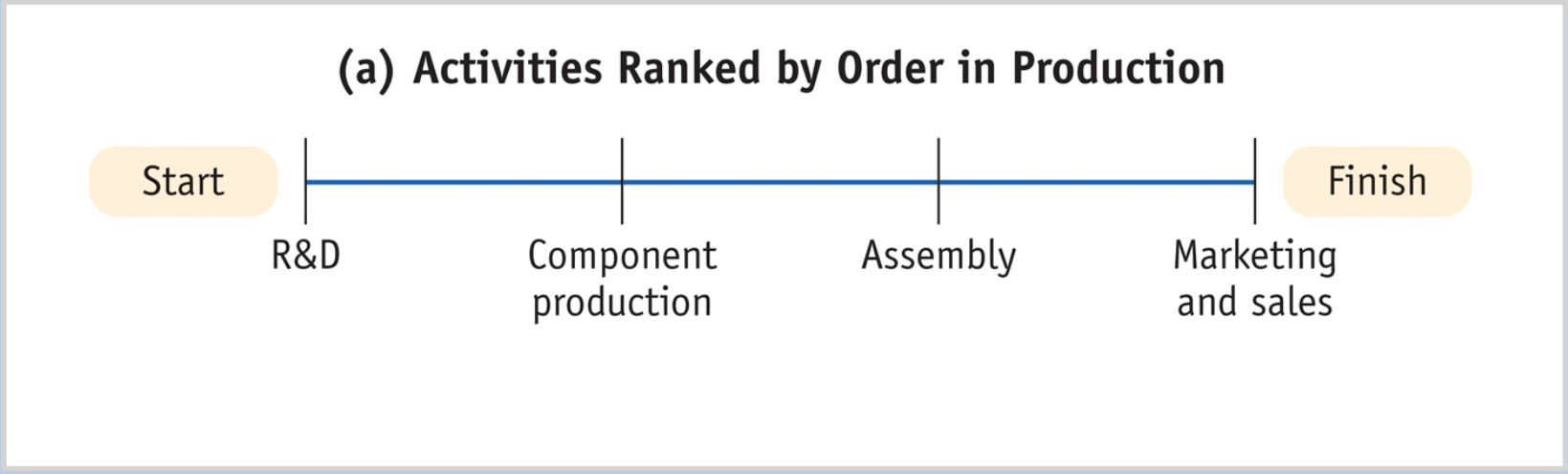
- In this chapter, we examine in detail the phenomenon of offshoring.
- First, we develop a model of offshoring to see how offshoring alters the activities of the firm.
  - We analyze the impact of offshoring on the demand and relative wage of workers at home and abroad.
  - We also examine the gains from offshoring, how it affects relative prices and the terms of trade, and ultimately how it affects both firms and workers.
- Finally, we examine the response to offshoring in the United States, and end with a note about the politics and future of offshoring.

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1 A Model of Offshoring

Value Chain of Activities

FIGURE 7-1 (1 of 2) The Value Chain of a Product



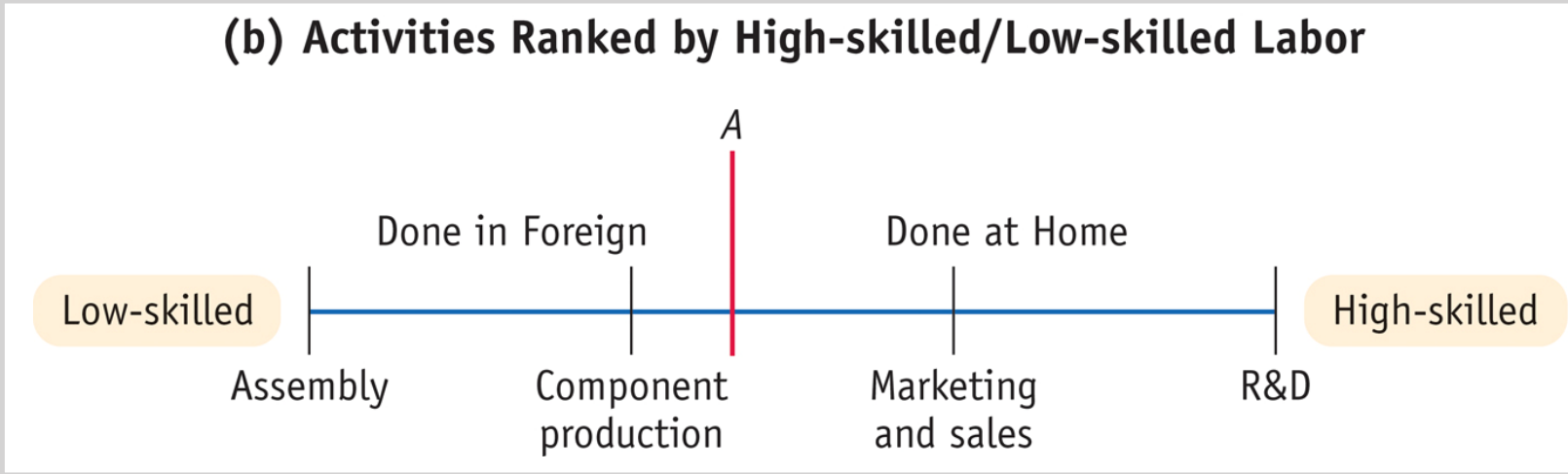
Any product has many different activities involved in its manufacture. Panel (a) lists some of these activities for a given product in the order in which they occur.

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1 A Model of Offshoring

Value Chain of Activities

FIGURE 7-1 (2 of 2) The Value Chain of a Product (continued)



The value chain in (b) lists these same activities in order of the amount of high-skilled/low-skilled labor used in each. In panel (b), the assembly activity, on the left, uses the least skilled labor, and R&D, on the right, uses the most skilled labor.

Because we assume that the relative wage of skilled labor is higher at Home and that trade and capital costs are uniform across activities, there is a point on the **value chain**, shown by line A, below which all activities are offshored to Foreign and above which all activities are performed at Home.

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1 A Model of Offshoring

Value Chain of Activities

Relative Wage of Skilled Workers

Our first assumption is that Foreign wages are less than those at Home, so

$$W^*_L < W_L \text{ and } W^*_H < W_H.$$

Also, that the *relative wage* of low-skilled labor is lower in Foreign than at Home, so

$$W^*_L/W^*_H < W_L/W_H.$$

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1 A Model of Offshoring

Value Chain of Activities

Costs of Capital and Trade

- Although labor costs are lower in Foreign, the firm must also take into account extra costs of doing business there.
  - higher prices to build a factory or costs of production
  - the extra costs of communication or transportation
- In making the decision to outsource, a firm will balance the savings from lower wages against the extra costs of capital and trade.
- We assume these extra costs apply *uniformly* across all the activities in the value chain—a somewhat unrealistic assumption.

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1 A Model of Offshoring

Value Chain of Activities

Slicing the Value Chain

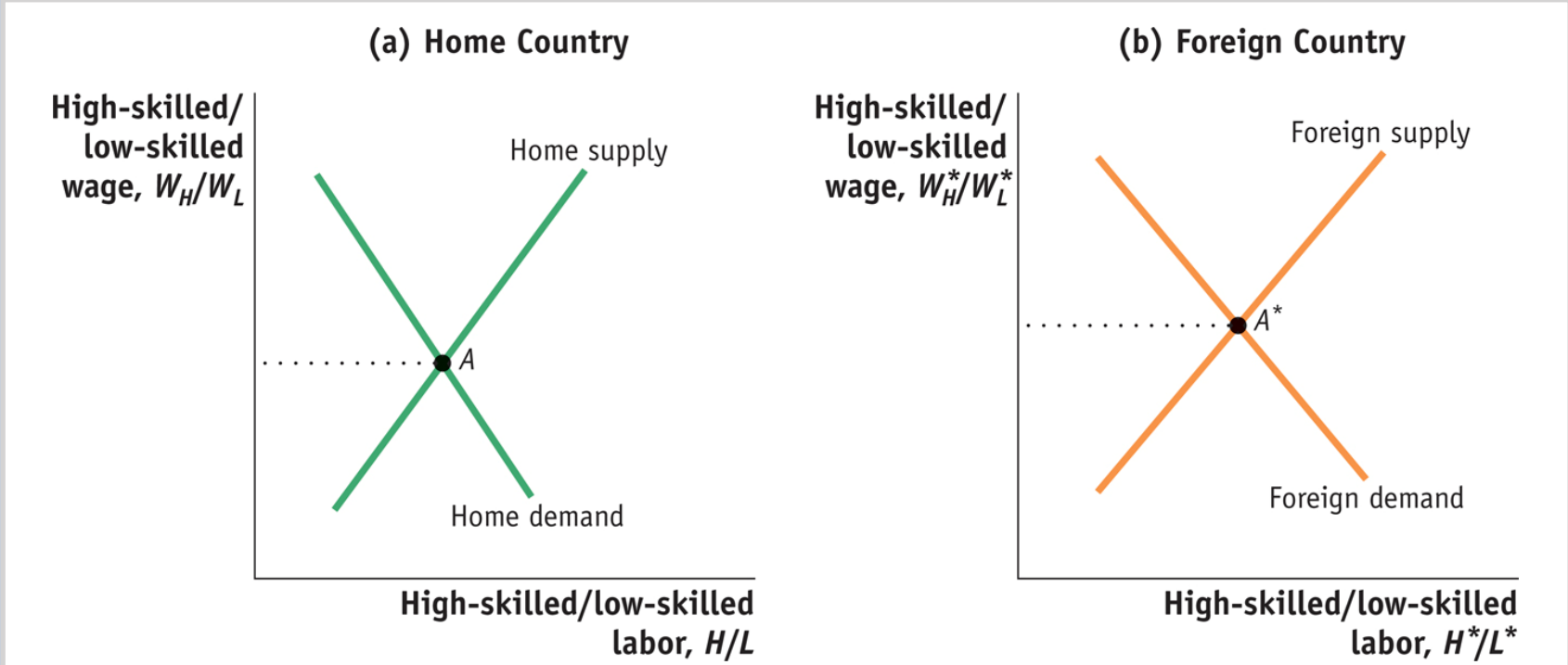
- The cost savings on wages are important in determining which activities to transfer and which to keep at Home.
- This is referred to as *slicing the value chain*.

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1 A Model of Offshoring

Relative Demand for Skilled Labor

FIGURE 7-2



Relative Demand and Supply for High-Skilled/Low-Skilled Labor

In panel (a), we show the relative demand and supply for skilled labor at Home, H/L, depending on the relative wage, W_H/W_L. The equilibrium relative wage at Home is determined at A.

In panel (b), we show the relative demand and supply for skilled labor in Foreign, H^*/L^*, depending on the relative wage, W^*_H/W^*_L. The Foreign equilibrium is at point A^*.

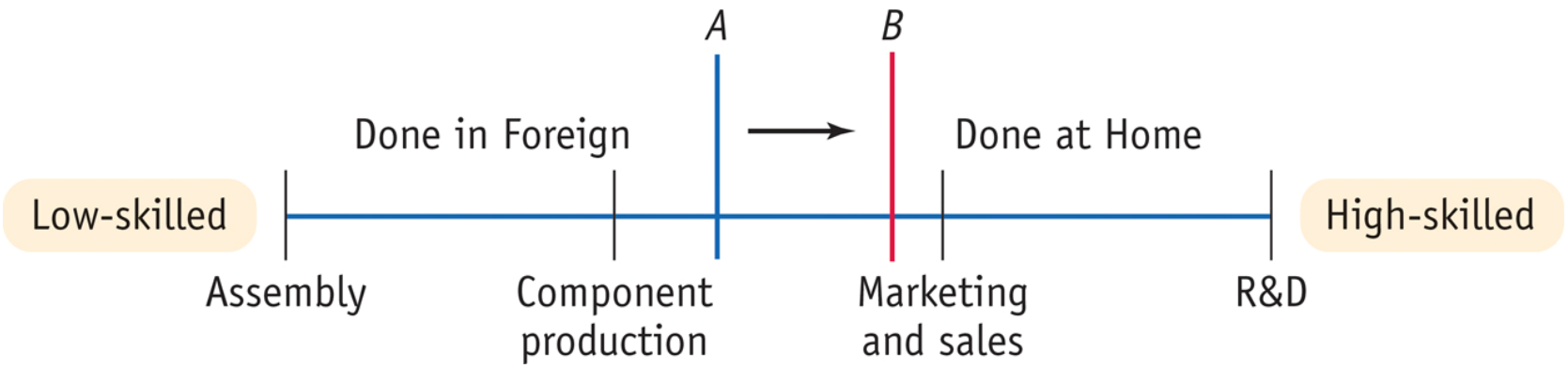
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1 A Model of Offshoring

Changing the Costs of Trade

Change in Home Labor Demand and Relative Wage

FIGURE 7-3



Offshoring on the Value Chain As the costs of capital or trade fall in the Foreign country, a Home firm will find it profitable to offshore more activities.

Offshoring shifts the dividing line between Home and Foreign production from *A* to *B*. The activities between *A* and *B*, which formerly were done at Home, are now done in Foreign.

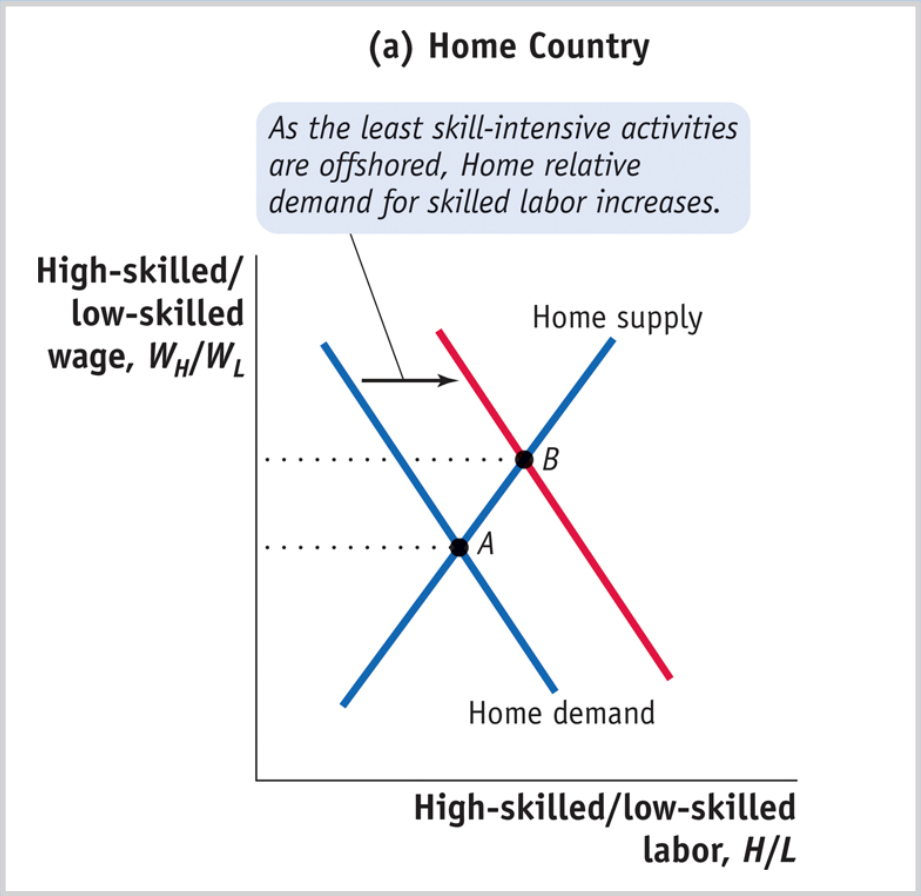
These activities are more skill-intensive than the activities formerly done in Foreign (to the left of *A*) but less skill-intensive than the activities now done at Home (right of *B*).

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1 A Model of Offshoring

Change in Foreign Labor Demand and Relative Wage

FIGURE 7-4 (1 of 2) Change in the Relative Demand for High-Skilled/Low-Skilled Labor



With greater offshoring from Home to Foreign, some of the activities requiring less skill that were formerly done at Home are now done abroad.

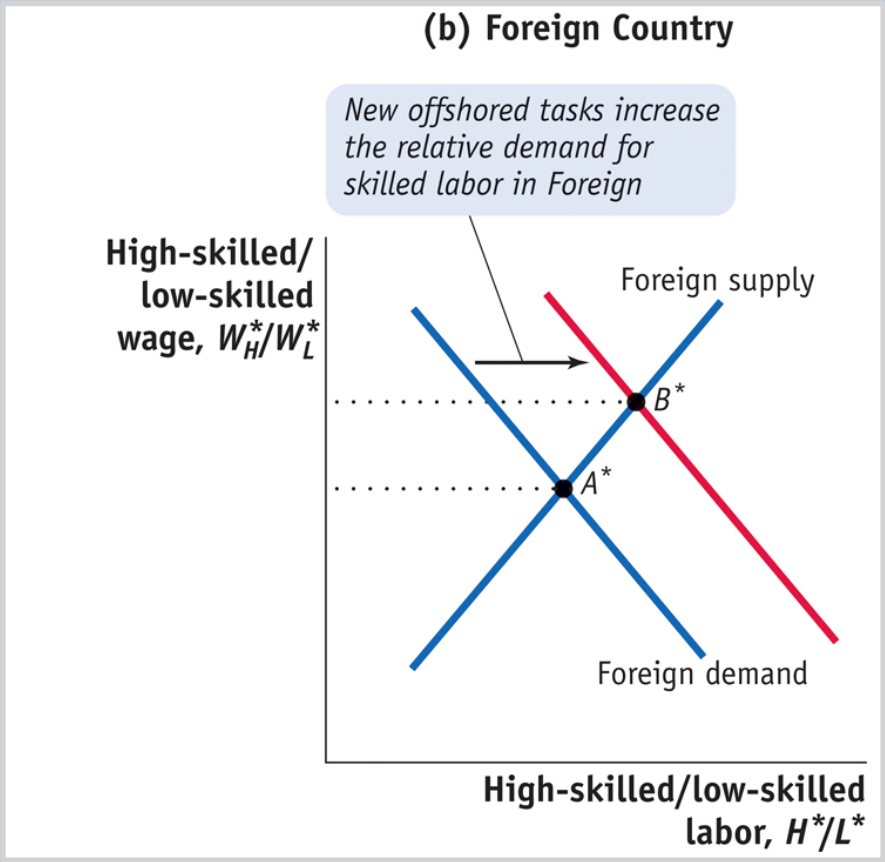
It follows that the relative demand for skilled labor at Home increases, and the relative wage rises from point *A* to point *B*.

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1 A Model of Offshoring

Change in Foreign Labor Demand and Relative Wage

FIGURE 7-4 (2 of 2) Change in the Relative Demand for High-Skilled/Low-Skilled Labor (continued)



The relative demand for skilled labor in Foreign also increases because the activities shifted to Foreign are more skill intensive than those formerly done there.

It follows that the relative wage for skilled labor in Foreign also rises, from point A^* to point B^*.

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Change in Foreign Labor Demand and Relative Wage

Both countries experience *an increase* in the relative wage of skilled labor due to increased outsourcing.

- As activities in the middle of the value chain are shifted from Home to Foreign, they raise the relative demand for skilled labor in both countries.
- These activities are the least skill-intensive of those formerly done at Home but the most skill-intensive of those done in Foreign.
- So the relative demand for skilled labor rises in both countries along with the relative wage.

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APPLICATION

Change in Relative Wages Across Countries

- Our offshoring model predicts that the relative wage of skilled workers will rise in *both* the country doing the offshoring and the country receiving the new activities.
- Indeed, since the early 1980s, the wages of skilled workers have risen relative to those of unskilled workers in the U.S. as well as other countries.
- We can use data from the manufacturing sector on "production" (unskilled) and "non-production" (skilled) workers.

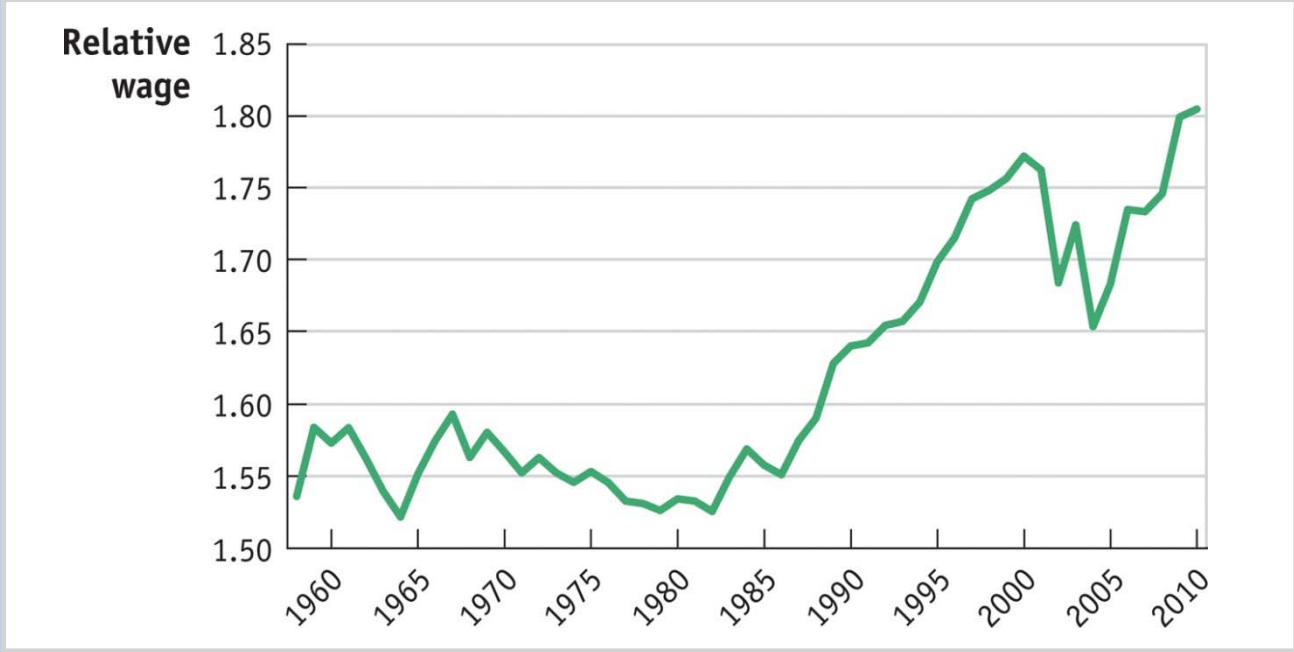
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APPLICATION

Change in Relative Wages in the United States

Relative Wage of Nonproduction Workers

FIGURE 7-5 Relative Wage of Nonproduction/Production Workers, U.S. Manufacturing



This diagram shows the average wage of nonproduction workers divided by the average wage of production workers in U.S. manufacturing. This ratio displayed a downward trend during the 1960s and 1970s before reversing itself during the 1980s, when the relative wage of nonproduction workers increased until 2000. In more recent years, the relative wage has become quite volatile, falling erratically until 2004, then rising to 2010.

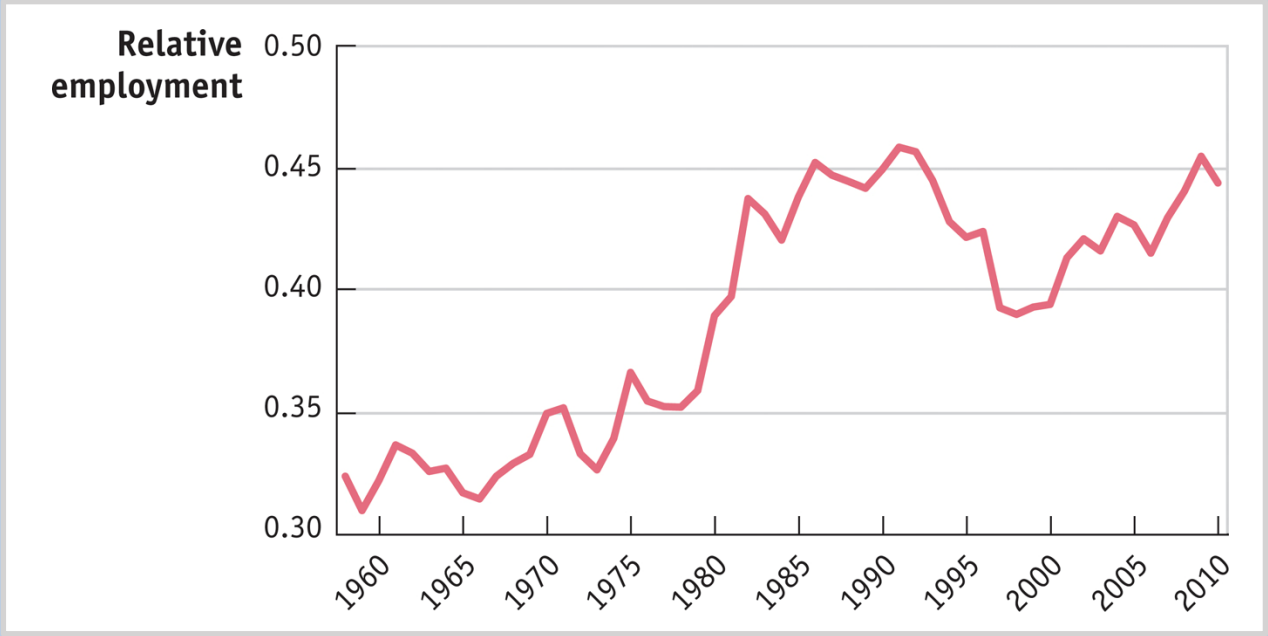
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APPLICATION

Change in Relative Wages in the United States

Relative Employment of Nonproduction Workers

FIGURE 7-6 Relative Employment of Nonproduction/Production Workers, U.S. Manufacturing



This diagram shows the employment of nonproduction workers in U.S. manufacturing divided by the employment of production workers. There was a steady increase in the ratio of nonproduction to production workers employed in U.S. manufacturing until the early 1990s. During the 1990s there was a fall in the ratio of nonproduction to production workers until 1998, and then a rise again thereafter.

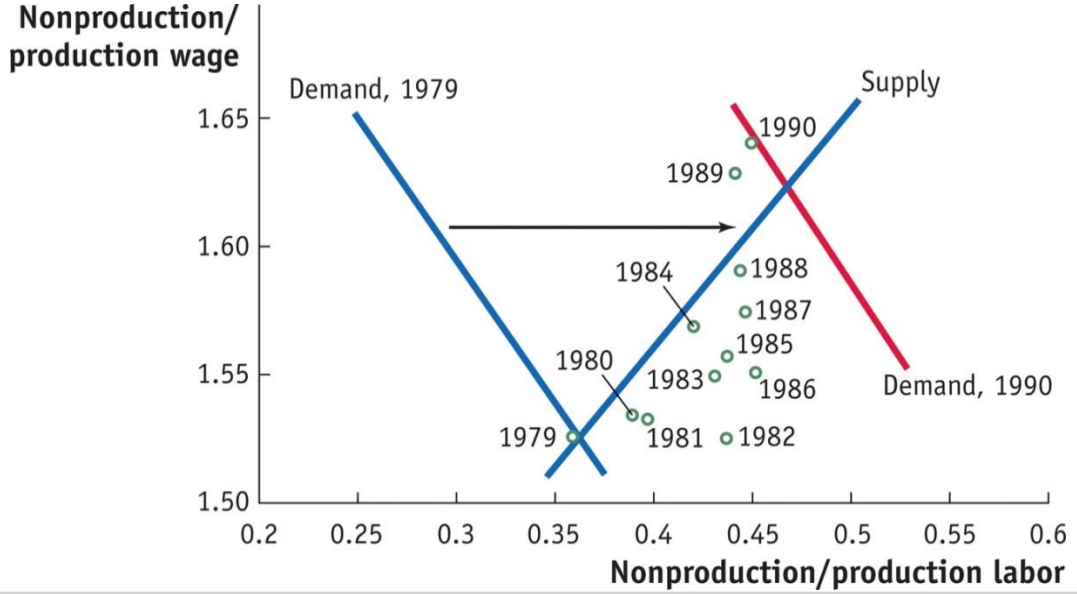
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APPLICATION

Change in Relative Wages in the United States

Relative Employment of Nonproduction Workers

FIGURE 7-7 Supply and Demand for Nonproduction/Production Workers in the 1980s



This diagram shows the average wage of nonproduction workers divided by the average wage of production workers on the vertical axis, and on the horizontal axis employment of nonproduction workers divided by employment of production workers. Both the relative wage and the relative employment of nonproduction, or skilled, workers rose during the 1980s, indicating that the relative demand curve must have shifted to the right.

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APPLICATION

Change in Relative Wages in the United States

Explanations

The shift in relative demand toward skilled workers because of the use of computers and other high-tech equipment is called **skill-biased technological change**.

To explain the shift in relative demand, we can:

- Observe the increase in the share of **total wage payments** going to non-production labor in U.S. manufacturing industries. This captures both the rising relative wage and the rising relative employment of skilled workers.
- Analyze the increase in relative wages of non-production labor.

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APPLICATION

Change in Relative Wages in the United States

Explanations

- Outsourcing is measured as the intermediate inputs imported by each industry.
- High-technology equipment can be measured in two ways:
  - As a fraction of the total capital equipment installed in each industry.
  - As a fraction of new investment in capital that is devoted to computers and other high-tech devices.
- Table 7.1 reports the results from both of these measures.

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APPLICATION

Change in Relative Wages in the United States

Explanations

TABLE 7-1

Increase in the Relative Wage of Nonproduction Labor in U.S. Manufacturing, 1979-1990 This table shows the estimated effects of offshoring and the use of high-technology equipment on the wages earned by nonproduction (or skilled) workers. Part A focuses on how these variables affect the share of wage payments going to nonproduction workers. Part B shows how these two variables affect the relative wage of nonproduction workers.

	PERCENT OF TOTAL INCREASE EXPLAINED BY EACH FACTOR	
	Offshoring	High-Technology Equipment
Part A: Share of Wage Payments Going to Nonproduction Workers		
Measurement of high-tech equipment:		
As a share of the capital stock	20–23	8–12
As a share of capital flow (i.e., new investment)	13	37
Part B: Relative Wage of Nonproduction/Production Workers		
Measurement of high-tech equipment:		
As a share of the capital stock	21–27	29–32
As a share of capital flow (i.e., new investment)	12	99

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APPLICATION

Change in Relative Wages in the United States

Explanations

- Summing up, we conclude that both offshoring and high-tech equipment are important explanations for the increase in the relative wage of nonproduction/production labor in U.S. manufacturing.
- However, it is difficult to judge which is more important because the results depend on how we measure the high-tech equipment.

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APPLICATION

Change in Relative Wages in Mexico

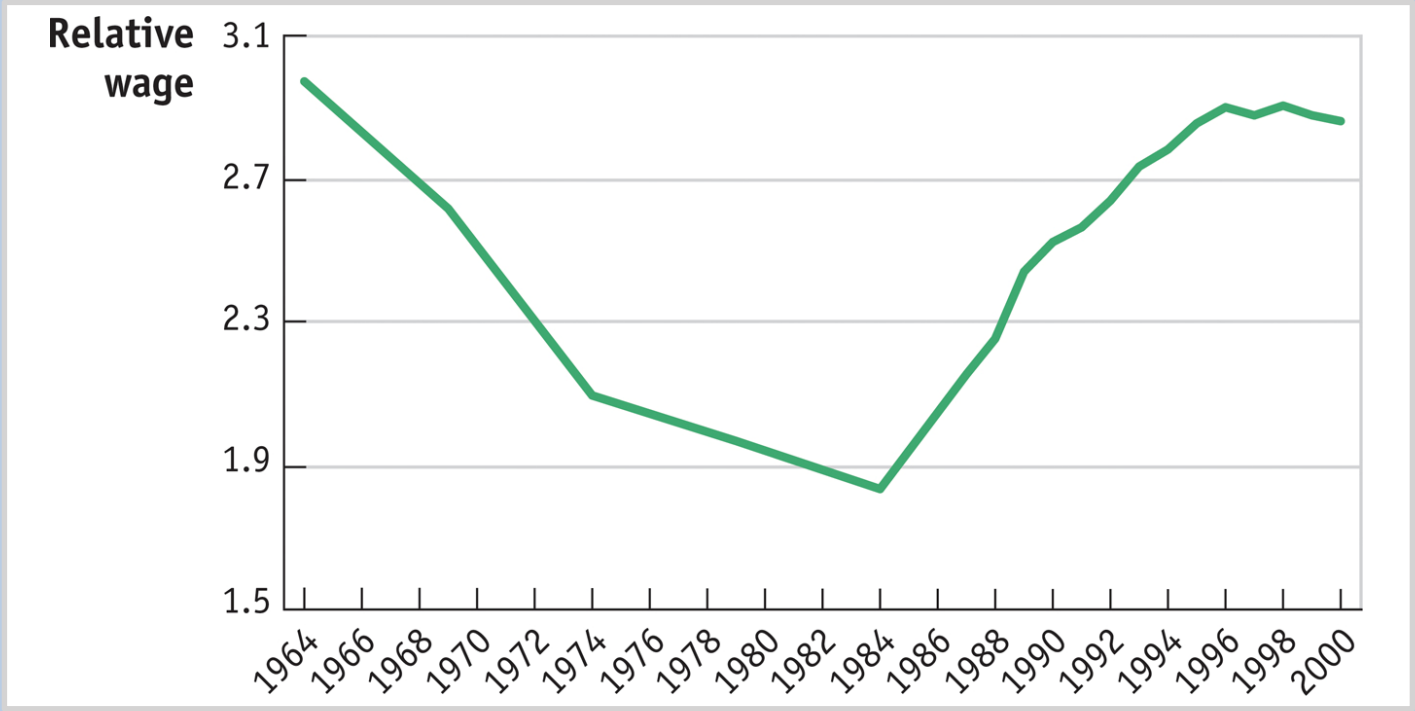
- Did wages in Mexico workers rise, as the model correctly anticipated for the U.S.?
  - The data seem to follow the same trends that we saw in the U.S. relative wages do move in the same direction in both countries.
  - However, after the onset of NAFTA in 1994, relative wages move in opposite directions in the maquiladora and non-maquiladora plants in Mexico.

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APPLICATION

Change in Relative Wages in Mexico

FIGURE 7-8 Relative Wage of Nonproduction/Production Workers, Mexico Manufacturing



This diagram shows the wage of nonproduction workers in the manufacturing sector of Mexico divided by the wage of production workers. After declining during the 1960s and 1970s, this relative wage began to move upward in the mid-1980s, at the same time that the relative wage of nonproduction workers was increasing in the United States. The relative wage in Mexico continued to rise until 1994, when NAFTA began.

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2 The Gains from Offshoring

We have shown that outsourcing can shift the relative demand for labor, and raise the wage for skilled workers.

- Since the wage for unskilled workers is the reciprocal of that for skilled workers, outsourcing will decrease the relative wage for unskilled workers.
- However, outsourcing reduces production costs which, in a competitive market, reduces prices.
- We conclude then that outsourcing can have benefits for both producers and their workers, and consumers.

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2 The Gains from Offshoring

- In this section, we try to balance the potential losses faced by some groups (unskilled labor) with the gains enjoyed by others (skilled labor and consumers).
- In the previous chapters, the Ricardian and Heckscher-Ohlin models generate more gains than losses. Is this true for outsourcing?

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2 The Gains from Offshoring

Simplified Offshoring Model

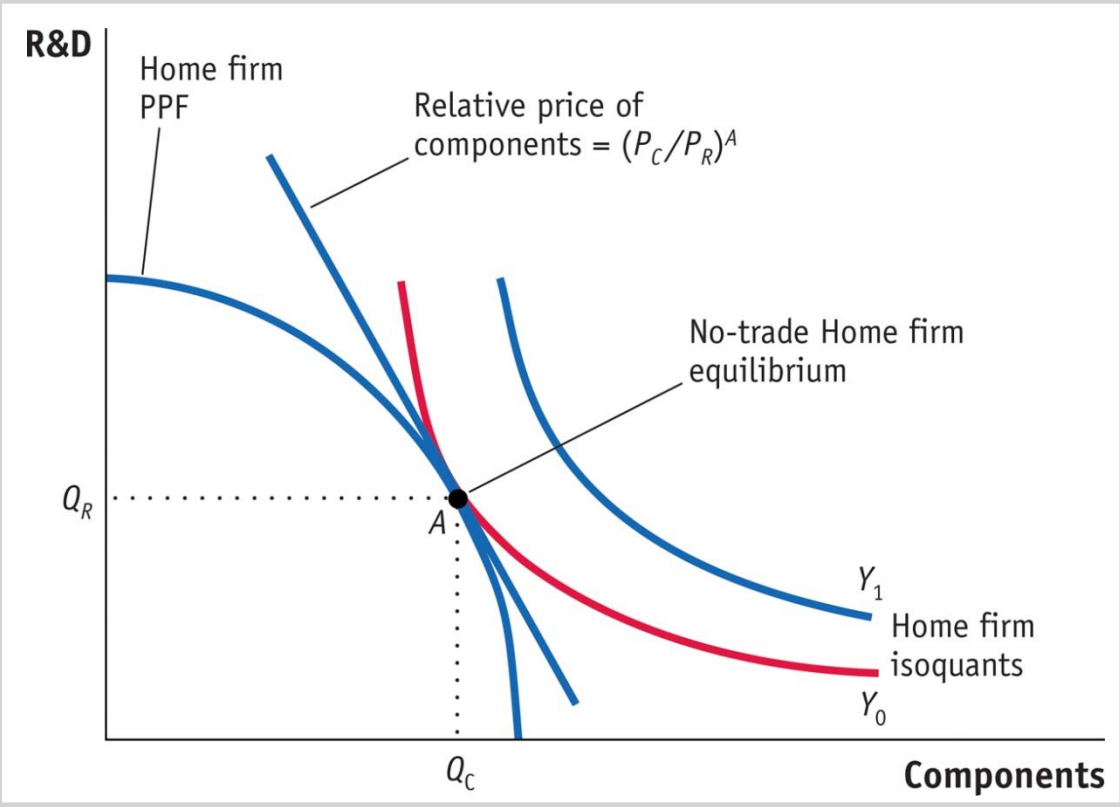
- Suppose there are only two activities:
  1. components production
  2. and research and development (R&D)
- Each activity uses skilled and unskilled labor, but components uses unskilled labor intensively and R&D uses skilled labor intensively.
- The costs of capital are equal in both activities.
- We want to compare the no-trade situation to an equilibrium with trade through outsourcing, to determine if there are overall gains from trade.

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2 The Gains from Offshoring

Simplified Offshoring Model

FIGURE 7-9 No-Trade Equilibrium for the Home Firm



The PPF shows the combinations of components and R&D that can be undertaken by a firm with a given amount of labor and capital.

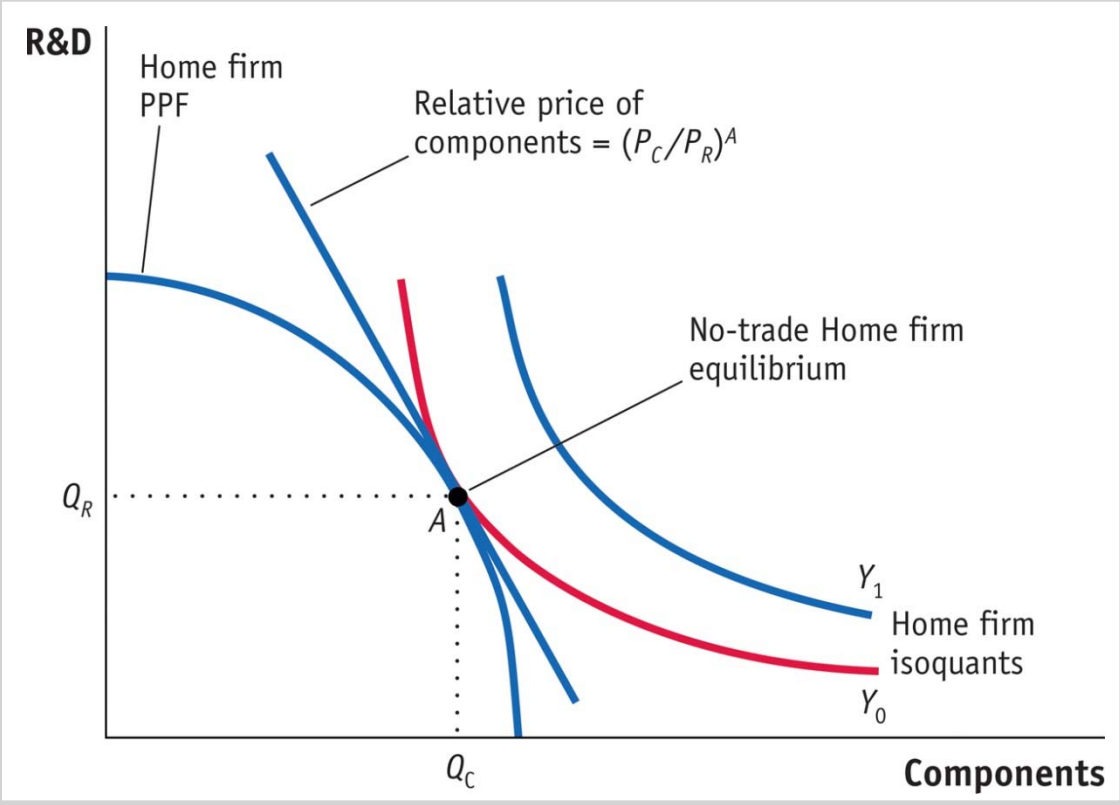
In the absence of offshoring, the firm produces at A, using quantities Q_C of components and Q_R of R&D to produce amount Y_0 of the final good.

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2 The Gains from Offshoring

Simplified Offshoring Model

FIGURE 7-9 No-Trade Equilibrium for the Home Firm (continued)



The line tangent to the **isoquant** through point A measures the value that the firm puts on components relative to R&D, or their relative price, $(P_C/P_R)^A$.

Amount Y_1 of the final good cannot be produced in the absence of offshoring because it lies outside the PPF for the firm.

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2 The Gains from Offshoring

Equilibrium with Outsourcing

- Suppose the firm can import and export its production activities through outsourcing.
- The quantity of the final good is no longer constrained by the Home PPF.
- A higher level of production (isoquant) is possible by trading intermediate activities.
- We will refer to the relative price of the two activities that the Home firm has available through outsourcing as their world relative price, $(P_C/P_R)^{W1}$.
- Assume the world relative price of components is cheaper than Home's no-trade relative price.

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2 The Gains from Offshoring

Equilibrium with Outsourcing

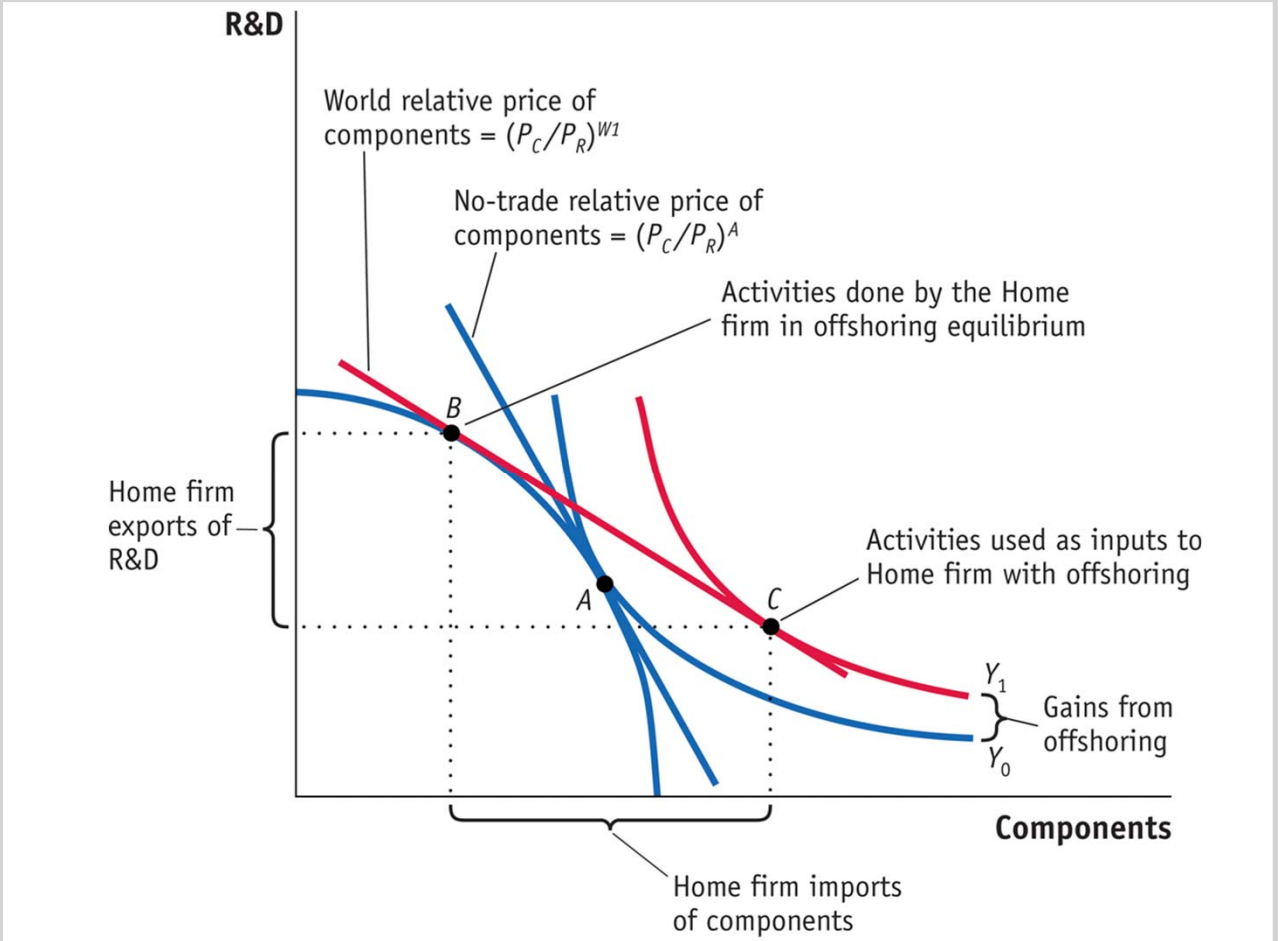
- With a lower relative wage of unskilled labor in Foreign, the components assembly will also be cheaper in Foreign.
- It follows that Home will want to outsource components, which are cheaper abroad, while Home firms will be exporting R&D, which is cheaper at Home.

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2 The Gains from Offshoring

Equilibrium with Outsourcing

FIGURE 7-10 Offshoring Equilibrium for the Home Firm



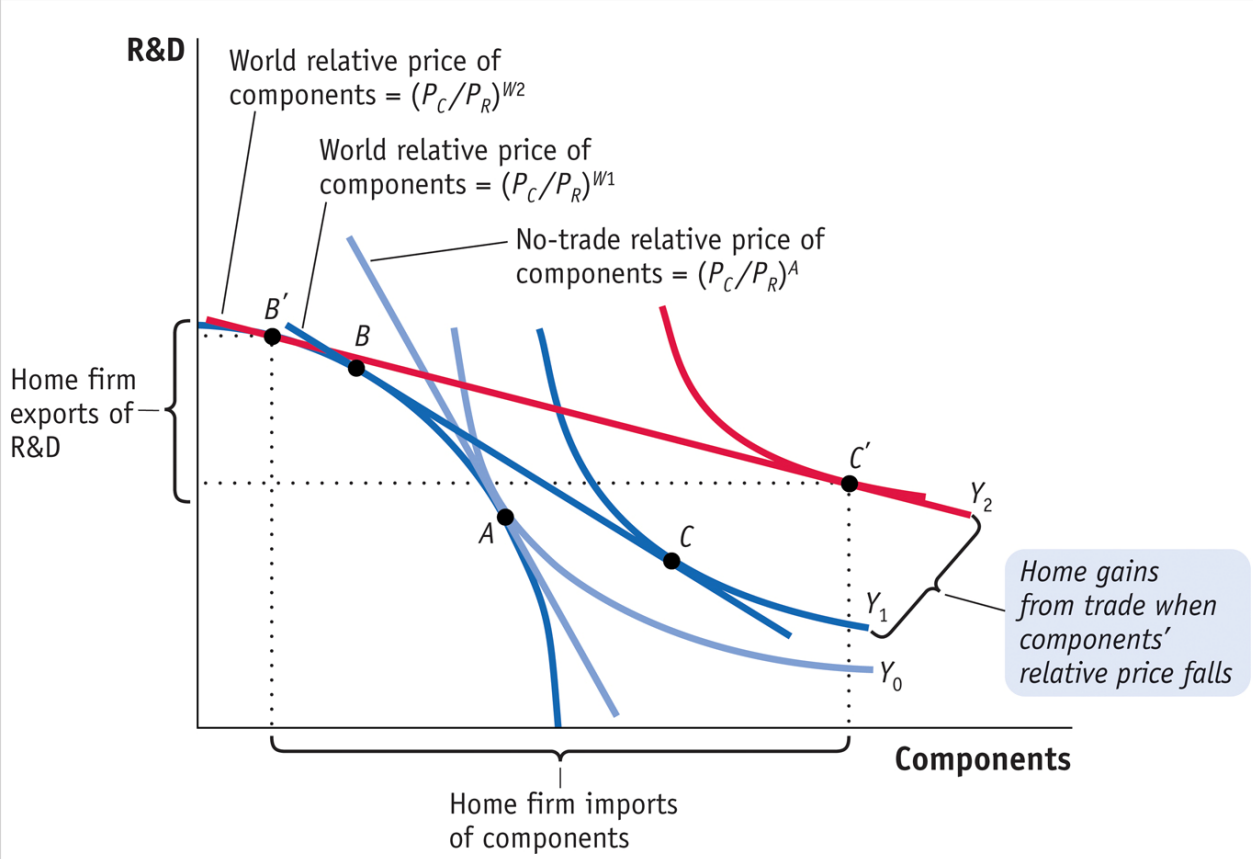
In the presence of offshoring, the Home firm will do more R&D and less component production, at point B. The Home firm then exports R&D activities and imports components at the world relative price of components, which allows it to produce the amount Y_1 of the final good. The difference between Y_0 and Y_1 represents the gains to the Home firm from offshoring.

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2 The Gains from Offshoring

Fall in the Price of Components

FIGURE 7-11 Fall in the Price of Component



If the relative price of components falls from $(P_C/P_R)^{W1}$ to $(P_C/P_R)^{W2}$, then the Home firm will do even more R&D and less components production, at point B' rather than B.

The increase in the terms of trade allows the Home firm to produce output Y_2 at point C', and the gains from trade are higher than in the initial offshoring equilibrium (points B and C).

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2 The Gains from Offshoring

Gains from Offshoring within the Firm

- The increase of final goods produced ($Y_0 - Y_1$) is a measure of the gains from trade to the Home firm from outsourcing.
- Because more of the final good is produced with the same overall amount of skilled and unskilled labor available in Home, the Home company is more productive. Both its costs of production, and the price of the final product falls.
- The gains for this company are also spread to consumers.
- Therefore: *When comparing a no-trade situation to the equilibrium with offshoring, and assuming that the world relative price differs from that at Home, there are always gains from offshoring.*

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2 The Gains from Offshoring

Terms of Trade

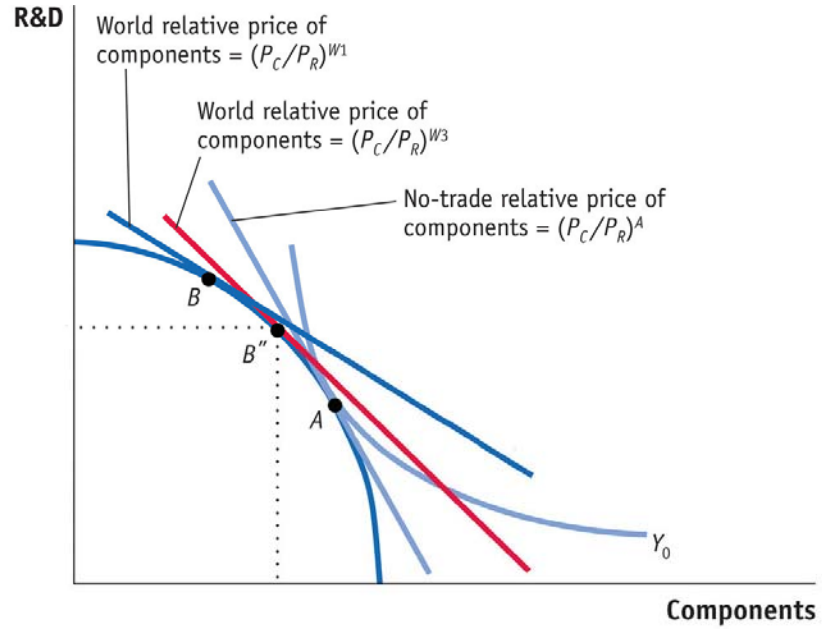
- A country's terms of trade equal the price of the country's exports divided by the price of its imports. The home terms of trade are $(P_R/P_C)^{W1}$.
- Home is exporting R&D and importing components.
- A rise in the terms of trade indicates that a country is getting a higher price for its exports, or paying a lower price for its imports—both benefit the country.
- Conversely, a fall in the terms of trade harms a country, because it is paying more for its imports and getting less for its exports.

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2 The Gains from Offshoring

Fall in the Price of R&D

FIGURE 7-12 (1 of 3) A Fall in the Price of R&D



A fall in the relative price of R&D makes the world price line steeper, $(P_C/P_R)^{W3}$.

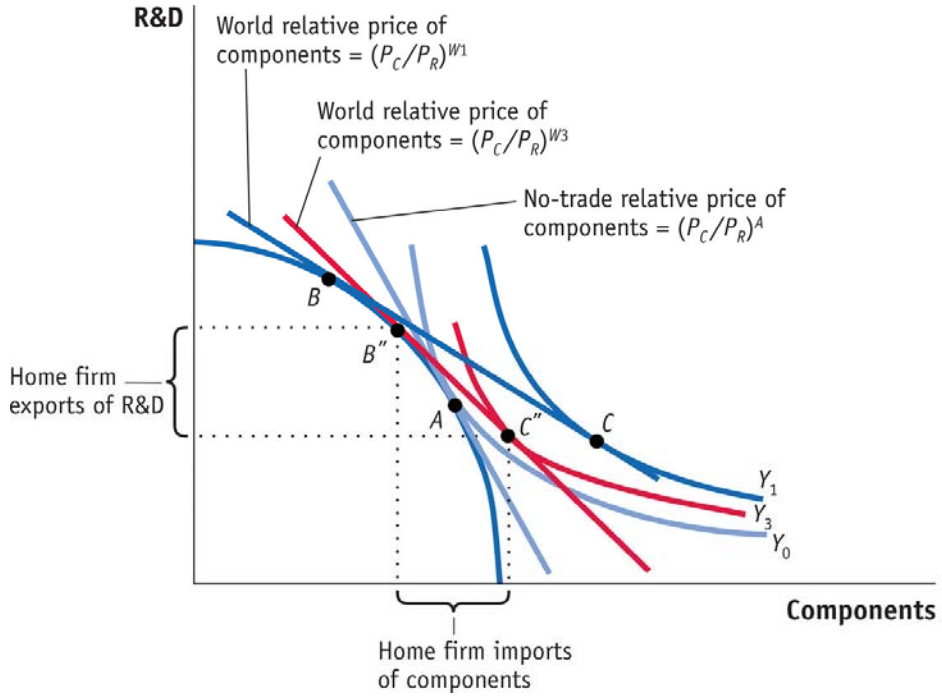
As a result, the Home firm reduces its R&D activities and increases its components activities, moving from B to B'' along the PPF.

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2 The Gains from Offshoring

Fall in the Price of R&D

FIGURE 7-12 (2 of 3) A Fall in the Price of R&D (continued)



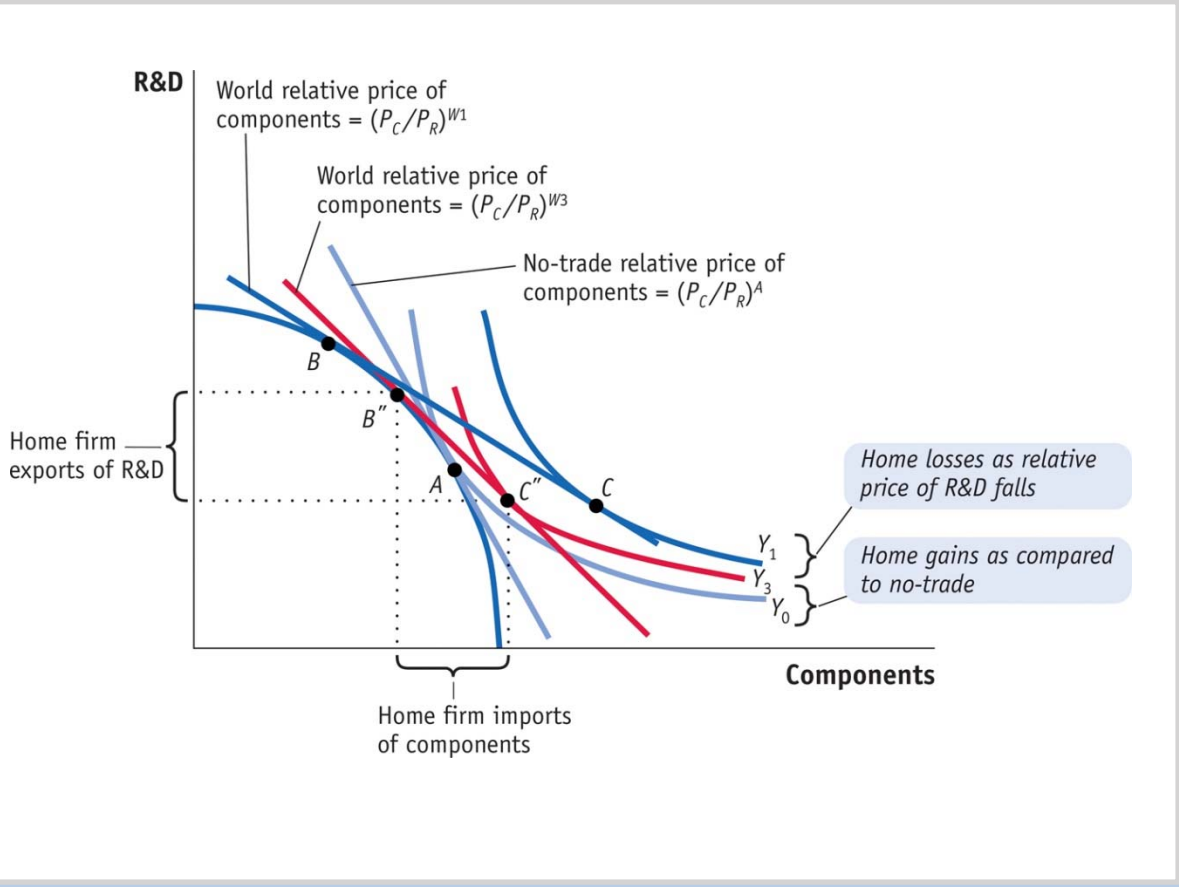
At the new world relative price, the Home firm faces a terms-of-trade loss and can no longer export each unit of R&D for as many components as it could in the initial offshoring equilibrium. The final good output is reduced from Y_1 to Y_3 at point C''. Notice that the final good output Y_3 is still higher than output without trade, Y_0.

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2 The Gains from Offshoring

Fall in the Price of R&D

FIGURE 7-12 (3 of 3) A Fall in the Price of R&D (continued)



After the fall in the relative price of R&D, there are still gains from trade relative to no-trade (point *A*)

but losses relative to the initial offshoring equilibrium (points *B* and *C*).

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2 The Gains from Offshoring

Today, the focus is frequently on of the newer forms of offshoring, the offshoring of **business services** to foreign countries.

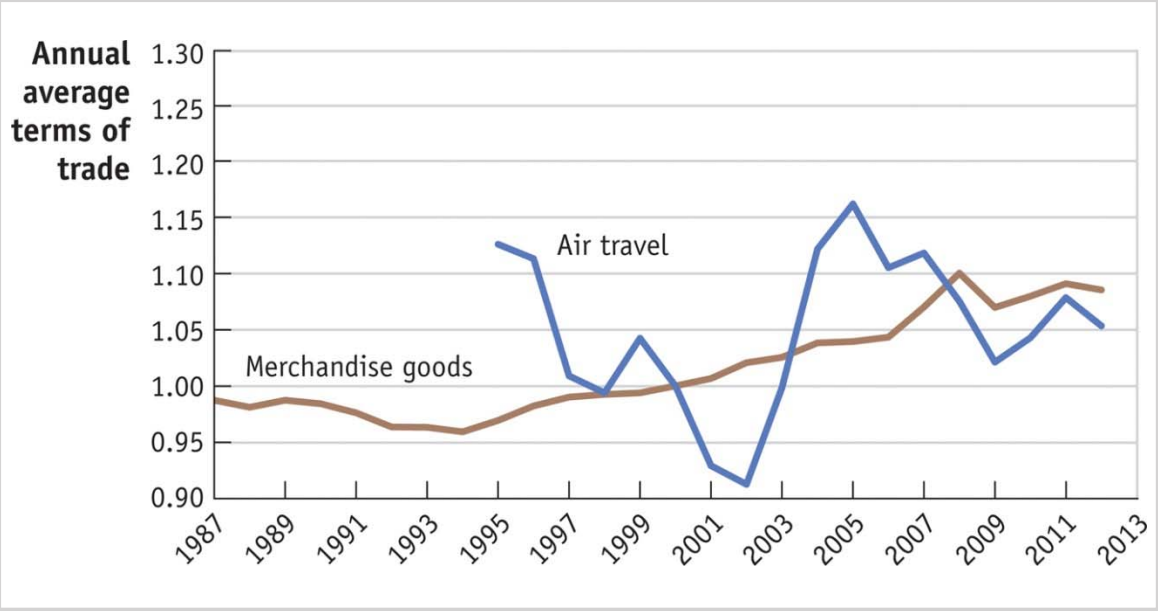
Business services are activities such as accounting, auditing, human resources, order processing, telemarketing, and after-sales service, like getting help with your computer.

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APPLICATION

U.S. Terms of Trade and Service Exports

FIGURE 7-13 (1 of 2) Terms of Trade for the United States 1990-2012



Shown here are the U.S. terms of trade for merchandise goods (excluding petroleum) and for air travel services. The terms of trade for merchandise goods fell from 1990 to 1994 and then rose to 2008, with a slight dip in 2009 and rising slightly thereafter.

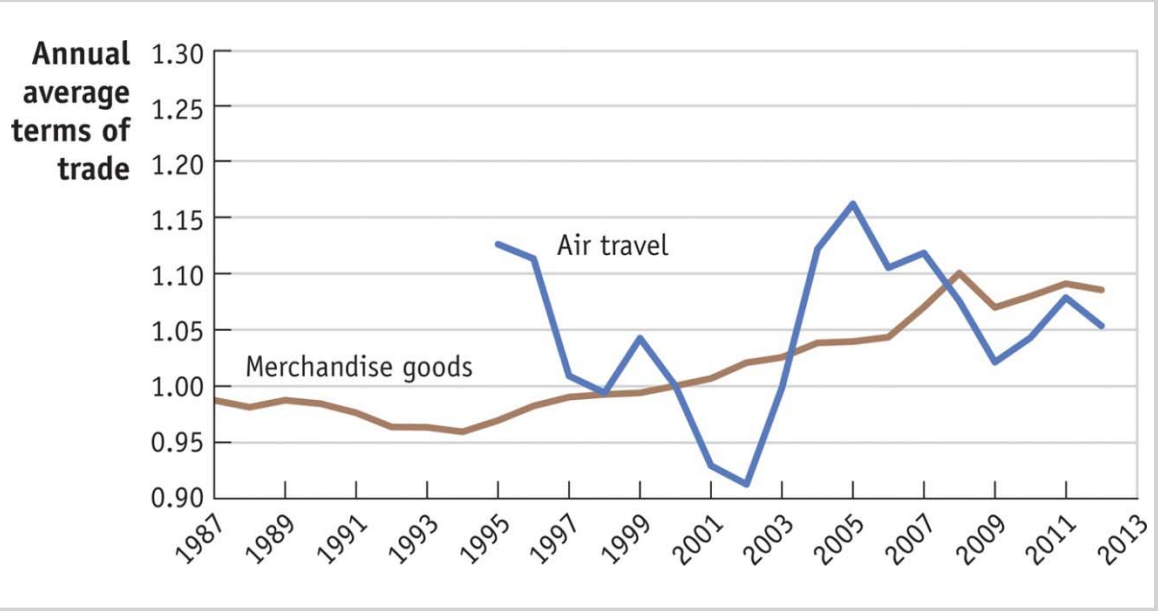
- A rise in the terms of trade reflects gains from exports of merchandise goods.
- The improvement in the terms of trade shows that we are able to import intermediates (and final goods) at lower prices over time.

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APPLICATION

U.S. Terms of Trade and Service Exports

FIGURE 7-13 (2 of 2) Terms of Trade for the United States 1990-2012 (continued)



The terms of trade for air travel services is more volatile, falling from 1995 to 2002, rising until 2005 and falling erratically until 2009. In sum, we do not see a pattern of declining terms of trade in either of these sectors.

Service Prices It is very difficult to measure service prices in international trade. We do not have an overall measure of the terms of trade in services. There is one service for which it is relatively easy to collect international prices: air travel.

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APPLICATION

U.S. Terms of Trade and Service Exports

Service Trade Although standard prices are not available, data on the amount of service exports and imports for the United States are collected annually.

The fact that exports exceed imports in many categories means that the United States has a comparative advantage in traded services.

TABLE 7-2

U.S. Trade in Services, 2011 ($ millions) This table shows U.S. exports and imports in the major categories of services trade for 2011.

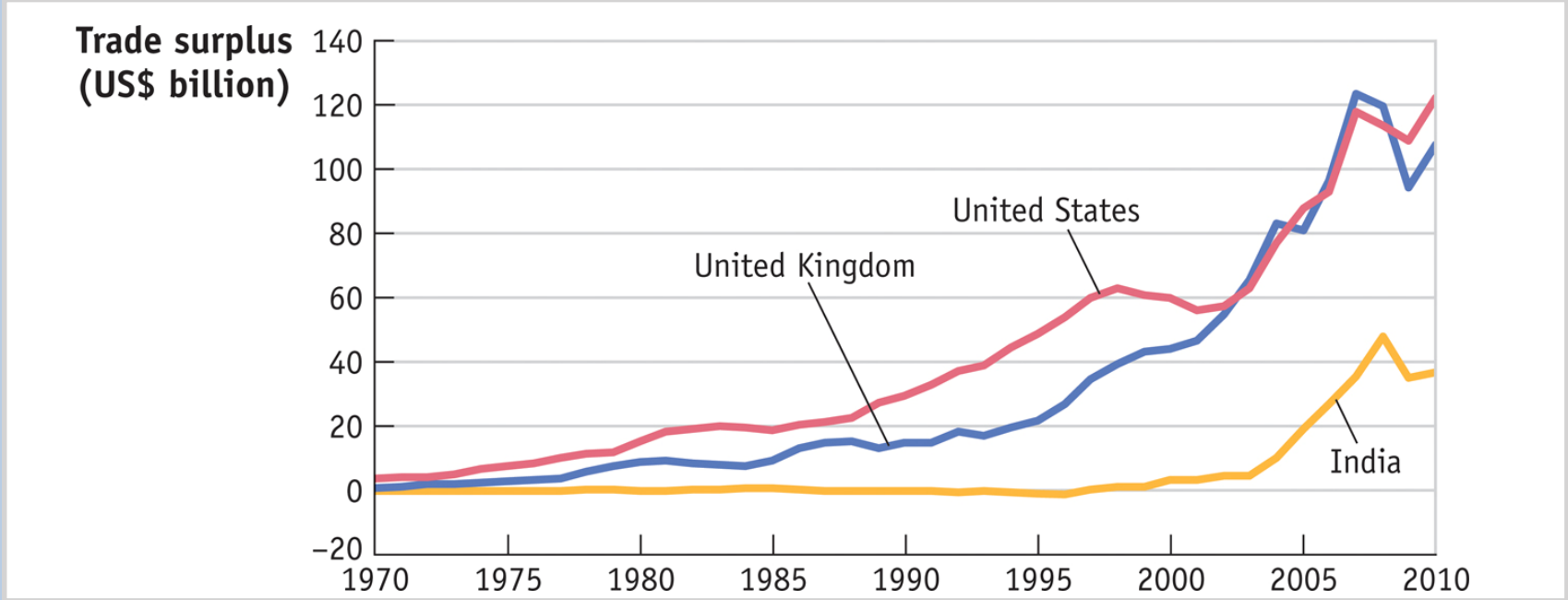
	Exports	Imports
Computer and information services	15,501	24,538
Management and consulting services	32,169	24,823
R&D and testing services	23,364	22,360
Operational leasing	7,142	1,922
Other business, professional, and technical services	56,240	31,130
Total business, professional, and technical services	$134,416	$104,773
Education	22,726	5,888
Financial services	74,055	16,207
Insurance services	15,477	56,619
Telecommunications	12,650	7,690
Total other private services	$270,193	$191,973
Travel	116,115	78,651
Passenger fares	36,631	31,109
Other transporation	43,064	54,711
Royalties and license fees	120,836	36,620
Other services	62,633	11,917
Total private services	$586,839	$393,065

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APPLICATION

U.S. Terms of Trade and Service Exports

FIGURE 7-14



Trade Surplus in Business Services This figure shows the combined trade surplus in computer and information services, other business services, and financial services for the United States, the United Kingdom, and India from 1970 to 2010.

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3 The Politics and Future of Offshoring

- Offshoring is controversial and is often the topic of political debate.
- President Obama recently announced that he would follow through on his campaign pledge to end the tax break on overseas profits of multinational firms.
- That change in policy does not have much support from economists.

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HEADLINES

How to Destroy American Jobs

Academic research has consistently found that expansion abroad by U.S. multinationals tends to support jobs based in the U.S.

More investment and employment abroad are strongly associated with more investment and employment in American parent companies.

Expanding abroad also allows firms to refine their scope of activities.

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HEADLINES

Caterpillar Joins "Onshoring" Trend

Some American companies have found it advantageous to take activities they had previously shifted overseas and move them back home, in what is called "onshoring."

After a decade of rapid globalization, economists say companies are seeing disadvantages of offshore production, including shipping costs, complicated logistics, and quality issues.

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3 The Politics and Future of Offshoring

The Future of U.S. Comparative Advantage

- The fear sometimes expressed in the popular press that offshoring threatens the elimination of most manufacturing and service jobs in the United States is overstated.
- The ability to offshore a portion of the production process allows other activities to remain in the United States.

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