This chapter complements the previous chapter of income determination under perfect competition by examining two imperfections in labor markets: monopsony power among employers and monopoly power among workers. These cause wage and job discrimination, occupational licensing, economic inequality, labor unions, and collective bargaining.

The chapter begins with a review of the assumptions of the ideal labor market. We then investigate employer monopsony – the absence of wage competition due to one or a few employers' dominance of the market for a specific labor skill. The impact of monopsony on wages and employment is applied to the volunteer army and why the War in Iraq is being fought in the face of a shortage of military recruits. We trace similar shortages of nurses, school teachers, and other occupations.

In contrast to the problem of employer monopsony, we also investigate the problem of employee monopoly: the role of craft unions and employee associations in sustaining higher than competitive wage rates for selected occupations. We also look at the relation between labor monopolies, job rationing, and various forms of economic discrimination.

Having considered the problems of monopsony and monopoly separately, we look at the ironic results of *bilateral monopoly*: conditions when monopsony employers negotiate with monopoly unions. Since the two competing models of labor unions – labor cartels vs. collective bargaining, provide dramatically different predictions of how union wages affect non-union incomes, we look at the empirical evidence generated by the *natural experiment* of right-to-work vs. union-shop states.

Competitive Labor Markets Revisited

Before we investigate the effects of imperfect competition on labor markets, let us review the assumptions of the competition labor market model explored in chapter 12:

1. There are so many employers and so many workers that no individual participant in the labor market has a noticeable impact on the market wage.
2. Workers possess identical skills, which they have acquired prior to their employment. All workers are paid the same market wage.
3. Employers attempt to maximize profit by hiring workers so that the marginal revenue generated by the last worker hired equals his/her wage + the unit cost of fringe benefits.
4. Real wage rates are freely flexible to rise during periods of labor shortage and to decline during periods of labor surplus.
5. There are no artificial barriers to market entry for either workers or employers. Workers need only possess the required skill to offer labor services, while employers can hire as many workers as they want at the equilibrium wage rate.

The operation of a competitive labor market is illustrated in Figure 13-1. Firms wish to hire L_0 workers at a wage rate of w_0 per hour. The last worker hired by each firm generates enough revenue to cover the workers wage. Workers supply L_0 hours of labor at wage rate w_0 because their reservation wages are less than or equal to w_0.

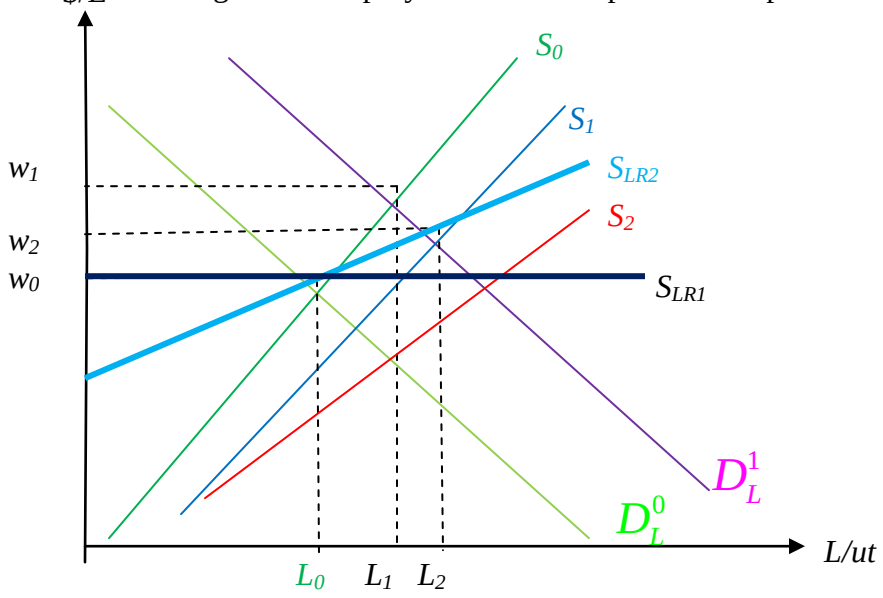


Figure 13-1: Competitive Labor Market in the Short-Run and the Long Run

Now suppose that an increase in the demand for labor, due, say, to an increase in the demand for the industry's product, shifts the market demand curve from D_0 to D_1. The resulting labor shortage (quantity of labor demanded increases to L' while quantity of labor supplied remains at L_0) increases the *short-run* equilibrium wage rate from w_0 to w_1, where the quantity of labor supplied increases to L_1 while the quantity of labor demanded decreases to L_1.

If wage rate w_1 represents a higher than normal return on workers' investment in human capital, we can expect more students to prepare for careers by training for that profession, until the rate of return on an investment in human capital in that career is equivalent to the return on investments in other forms of human capital. If training for that career is produced under competitive conditions, and if talent to complete that training is readily available, we would expect the (inflation-adjusted) wage rate to return to w_0, and the long run supply curve would be horizontal, like S_{LR1}. If schooling for this occupation were not competitive, if there were compensating differentials, or if the talent necessary to succeed in that schooling were becoming increasingly scarce, the short-run supply curve would shift only to a position like S_1, so that the wage rate would decline only to w_2. As a result, the long-run supply curve for labor would display a positive slope.

A competitive labor market, by virtue of its impersonality, succeeds because it frustrates the goals of participants. Employers, attempting to hire more workers at *prevailing* wage rates bid those wage rates up. Job seekers, who attempt to maximize the difference between their pay and their reservation wage cause wage rates to fall. A competitive labor market maximizes the number of workers employed as it maximizes the sum of employer surplus and employee surplus. However, when there are a few employers of a particular labor skill, employers become aware that offering higher wages to new hires increases the cost of previous hires, driving the marginal cost of labor higher than the market wage. Monopsony power, whether resulting from a single-employer confronting a positively sloped labor supply curve, or due to collusion among a few sellers, results in lower wage rates and fewer employees than would be the case in a competitive labor market.

When workers finance their own training or acquire labor skills outside their place of employment, there is the danger that a *labor cartel* will place artificial restrictions on the number of people who can acquire training. When an unanticipated demand increase raises wage rates to unaccustomed levels, the beneficiaries of this bounty often resent the encroachment of new trainees. More to the point, when educational attainment fails to keep pace with the changing demands of a global economy those ignorant of forces beyond their control typically blame "the other" – women, blacks, Jews, Hispanics – for their own inability to compete in a meritocracy.

When employers provide on-the-job training, veteran workers who instruct fledglings require assurance that the new trainees will not threaten their own wages, working conditions or fringe benefits. When experienced workers apply for new jobs, they know more about their skills and work habits than does their potential employer, but they also have an incentive to misrepresent the truth – perhaps even to themselves. This **asymmetric information** problem often leads to prejudice and discrimination.

Monopsony

The first labor market imperfection that we consider is **monopsony**, a market dominated by one buyer – in this context, by one employer. Like the monopoly case of one seller, monopsony is the polar opposite of the competitive labor market. Except for government jobs and one-company towns, instances of pure monopsony are rare. More likely are occurrences of **oligopsony,** literally markets with a few buyers who may collude to suppress wage rates and increase their collective employer surplus. Two hundred and thirty-four years ago, Adam Smith cited employer collusion to suppress wages the likely consequence of oligopsony:

> We rarely hear, it has been said, of the combination of masters, though frequently of those of workmen. But whoever imagines, upon this account, that masters rarely combine, is as ignorant of the world as of the subject. Masters are always and everywhere in a sort of tacit, but constant and uniform combination, not to raise the wage of labour above their actual rate. To violate this combination is everywhere a most unpopular action, and a sort of reproach to a master among his neighbors and equals. We seldom, indeed, hear of this combination, because it is the usual, and one may say, the natural state of things which nobody ever hears of. Masters too sometimes enter into particular combinations to sink the wages of labour even below this rate. These are always conducted with the utmost silence as they sometimes do, with resistance, though severely felt by them, they are never heard of by other people. Such combinations, however, are frequently resisted by a contrary defensive combination of workmen; who sometimes, too, without the provocation of this kind, combine of their own accord to raise the price of their labour. Their usual pretences are, sometimes the high price of provisions; sometimes the great profit which their master's make by their work. But whether their combinations be offensive or defensive, they are abundantly heard of.[1]

To develop a theory of oligopsony requires that we first develop a simpler model of monopsony.

Table 13-1 I show the hypothetical monopsony employer who faces a *market* supply curve given by $L_s = 10w$, where *w* is the reservation wage of the last worker hired. The marginal revenue product of labor is given by the equation $MRP_L = \$3000 - 10L$. If these equations de-

[1] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (New York: Random House, Modern Library, 1937), pp. 66-67.

scribed a competitive labor market, equilibrium employment would be established where the quantity of labor demanded (given by MRP_L) equaled the quantity of labor supplied:

$$3000 - 10L = 10L$$

$$20L = 3,000 \rightarrow L_e = \frac{3000}{20} = 150$$

$$MRP_L = 3000 - 10(150) = \$1,500$$

$$w_r = 10(L_s) = 10(150) = \$1,500$$

Table 13-1

Wage Offer (per week)	Labor Supplied	Marginal Product of Labor	Labor Demanded	Total Revenue	Total Wage Payments	Marginal Cost of Labor	Employer Surplus	Employee Surplus	Total Surplus
$0	0	$3,000	300	$0	$0	$0	$0	$0	$0
$100	10	$2,900	290	$29,500	$1,000	$200	$28,500	$500	$29,000
$200	20	$2,800	280	$58,000	$4,000	$400	$54,000	$2,000	$56,000
$300	30	$2,700	270	$85,500	$9,000	$600	$76,500	$4,500	$81,000
$400	40	$2,600	260	$112,000	$16,000	$800	$96,000	$8,000	$104,000
$500	50	$2,500	250	$137,500	$25,000	$1,000	$112,500	$12,500	$125,000
$600	60	$2,400	240	$162,000	$36,000	$1,200	$126,000	$18,000	$144,000
$700	70	$2,300	230	$185,500	$49,000	$1,400	$136,500	$24,500	$161,000
$800	80	$2,200	220	$208,000	$64,000	$1,600	$144,000	$32,000	$176,000
$900	90	$2,100	210	$229,500	$81,000	$1,800	$148,500	$40,500	$189,000
$1,000	*100*	*$2,000*	*200*	*$250,000*	*$100,000*	*$2,000*	*$150,000*	*$50,000*	*$200,000*
$1,100	110	$1,900	190	$269,500	$121,000	$2,200	$148,500	$60,500	$209,000
$1,200	120	$1,800	180	$288,000	$144,000	$2,400	$144,000	$72,000	$216,000
$1,300	130	$1,700	170	$305,500	$169,000	$2,600	$136,500	$84,500	$221,000
$1,400	140	$1,600	160	$322,000	$196,000	$2,800	$126,000	$98,000	$224,000
$1,500	**150**	**$1,500**	**150**	**$337,500**	**$225,000**	**$3,000**	**$112,500**	**$112,500**	**$225,000**
$1,600	160	$1,400	140	$308,000	$224,000	$3,200	$84,000	$140,000	$224,000
$1,700	170	$1,300	130	$279,500	$221,000	$3,400	$58,500	$162,500	$221,000
$1,800	180	$1,200	120	$252,000	$216,000	$3,600	$36,000	$180,000	$216,000
$1,900	190	$1,100	110	$225,500	$209,000	$3,800	$16,500	$192,500	$209,000
$2,000	*200*	*$1,000*	*100*	*$200,000*	*$200,000*	*$4,000*	*$0*	*$200,000*	*$200,000*
$2,100	210	$900	90	$175,500	$189,000	$4,200	-$13,500	$202,500	$189,000
$2,200	220	$800	80	$152,000	$176,000	$4,400	-$24,000	$200,000	$176,000
$2,300	230	$700	70	$129,500	$161,000	$4,600	-$31,500	$192,500	$161,000
$2,400	240	$600	60	$108,000	$144,000	$4,800	-$36,000	$180,000	$144,000
$2,500	250	$500	50	$87,500	$125,000	$5,000	-$37,500	$162,500	$125,000
$2,600	260	$400	40	$68,000	$104,000	$5,200	-$36,000	$140,000	$104,000
$2,700	270	$300	30	$49,500	$81,000	$5,400	-$31,500	$112,500	$81,000
$2,800	280	$200	20	$32,000	$56,000	$5,600	-$24,000	$80,000	$56,000
$2,900	290	$100	10	$15,500	$29,000	$5,800	-$13,500	$42,500	$29,000
$3,000	300	$0	0	$0	$0	$6,000	$0	$0	$0

We can also verify in Table 13-1 that the sum of employer surplus and employee surplus is maximized when the wage rate is set at $1,500 per week.

Under monopsony, however, the employer's marginal cost of labor increases faster than the wage rate, since workers hired at lower wage rates will demand higher wages when additional workers are hired. Table 13-1 is constructed under the assumption that there is no **wage dis-**

crimination, that is, that some workers are paid higher wage rates than other workers are for performing the same job. We will return to this issue in the next section. We can solve for the employer's marginal cost of labor by computing the change in the total wage payments, *wL*, with respect to the number of workers employed:

$$MC_L = \frac{\Delta(wL)}{\Delta L} = w + L\left(\frac{\Delta w}{\Delta L}\right) = 10L + L(10) = 20L$$

Like any profit-maximizer, the monopsonist maximizes profit by setting the marginal cost of labor equal to the marginal revenue (product) of labor.

$$MC_L = MRP_L \rightarrow 20L = 3000 - 10L \rightarrow 30L = 3000$$

$$L_m = \frac{3000}{30} = 100$$

$$w_r = 10L = 10(100) = \$1,000$$

$$MRP_L = 3000 - 10(1000) = \$2,000$$

Note that the wage rate paid is determined by the labor supply curve, so that the last worker hired is paid less than the value of his/her marginal revenue product. The reduction of the wage rate increases employer surplus from $112,500 at the competitive wage rate to $150,000 at the monopsony wage, a gain of $45,000. However, monopsony would reduce the employee surplus (the sum of the difference between the wage offer and the reservation wage) from $112,500 to $50,000, a loss of $62,500. The **excess burden** of monopsony would equal $25,000; the difference between the total surplus under competition ($225,000) and the total surplus under profit-maximizing monopsony ($200,000).

To summarize, monopsony confronts the employer with a positively sloped labor supply curve. The inability to practice wage discrimination means that all workers must be paid the same wage, implying that the marginal cost of labor rises faster than the reservation wage. As a consequence, the marginal cost of labor equals the marginal revenue product of labor at a lower employment level under monopsony than would be the case under competition. The lower quantity of labor implies a lower equilibrium wage rate, which in turn reduces the employee surplus.

Figure 13-2 shows the diagram associated with the data in Table 13-1. The reservation wage (inverse labor supply) function intersects the marginal revenue product line at employment level L_c = 150, implying an equilibrium wage rate of $1,500 per week. The employer surplus is $\frac{1}{2}(3,000 - 10L)L = \frac{1}{2}(3000 - 1500)150 = \$112,500$. The employee surplus is

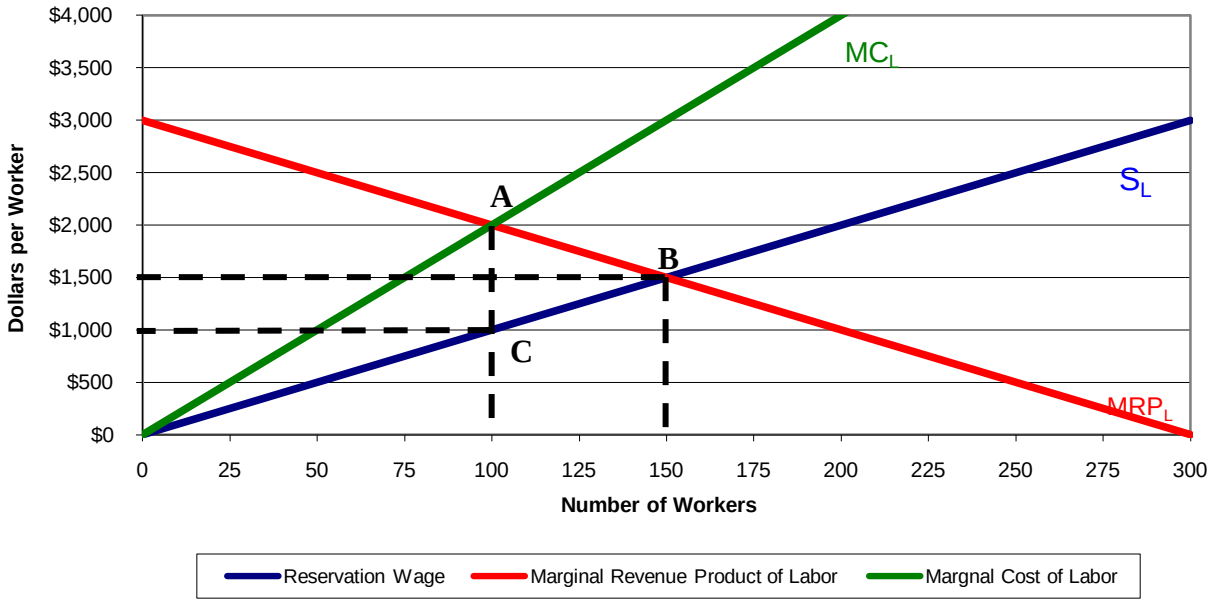
$$\frac{1}{2}(wL) = \frac{1}{2}10L^2 = 5L^2 = 5(150)^2 = 112,500$$

The monopsony employer hires labor until $MC_L = MRP_L$, which occurs when L = 100. The reduced employment increases the employer surplus to

$$\frac{1}{2}(3,000 - 10L)L + (MRP_L - w)L = \frac{1}{2}(3000 - 1000)100 + (2000 - 1000)100 = \$150,000$$

Since only the workers with the lowest reservation wages apply for the jobs at $1,000 per week, the employee surplus declines to $\frac{1}{2}(10L)L = 5*(100)^2 = \$50,000$. The excess burden equals triangle **ABC**: the sum of the employer and employee surplus for the 50 workers who were not hired.

Figure 13-2
Monopsony vs. Competitive Labor Market Equilibria



Monopsonistic Wage Discrimination

In chapter 9 we discovered that monopolists could increase their output and profits through *price discrimination*: charging different buyers different prices for the same product. We identified three forms of price discrimination. First degree price discrimination charged each consumer the highest price that (s)he would pay for each unit of the product. The result was to transfer 100% of consumer surplus into producer surplus, resulting in the same rate of output that would occur under perfect competition. The difficulty with practicing first-degree price discrimination is that the employer must know the demand equation for each consumer, and also prevent *arbitrage*, that is, resale of the product by consumers paying low prices to those paying higher prices. By analogy, **first degree wage discrimination** would result from paying each worker his or her reservation wage. This, of course, requires that the employer know each workers reservation wage and that the employer prevents workers from uniting against the employer. But since the luxury of academia is that we can learn by imagining the unlikely, we consider the consequences of first degree wage discrimination in our ongoing example.

First degree wage discrimination implies that the employer can hire additional workers with higher reservation wages *without increasing the wage offered to workers already hired*. Hence, the marginal cost of labor is the reservation wage. Table 13-2 reprises the example in Table 13-1, except for the adjustment of the marginal cost of labor. At a wage offer of $0, no workers apply for jobs; the employer would like to hire 300 workers (since the 300th worker's marginal revenue product would be $0), but workers cannot be hired if they do not apply. By offering $100 per week, 10 workers apply (hypothetically, the first worker gets $10, the second $20, and so forth). Total wage payments are $\$500\ (\$10+\$20+\cdots+\$100) = \frac{1}{2}(10L)L=5L^2 = \$500$. Since the marginal revenue product of labor is $290, while the marginal wage rate is only $100, the employer continues to hire workers, in each case adding $10 per worker, without increasing the wages of those already hired. The 100th worker is paid $1000 per week, but her marginal

revenue product is $2000, so the employer continues to hire additional workers. In fact, the profit-maximizing employment level is 150 workers, with a *marginal wage rate* equal to $1,500 per week. At any wage the employee surplus is $0, because workers are only paid their reservation wage rate. At the profit-maximizing employment level, the employer realizes an employer surplus of $225,000. Note that the employer would never offer a wage greater than $1500 per week, since such a wage offer would exceed the profit-maximizing wage offer.

Table 13-2: First Degree Wage Discriminating Monopsony

Wage Offer (per week)	Labor Supplied	Marginal Product of Labor	Labor Demanded	Total Revenue	Total Wage Payments	Marginal Cost of Labor	Employer Surplus	Employee Surplus	Total Surplus
$0	0	$0	300	$0	$0	$0	$0	$0	$0
$100	10	$100	290	$15,500	$500	$200	$15,000	$0	$15,000
$200	20	$200	280	$32,000	$2,000	$400	$30,000	$0	$30,000
$300	30	$300	270	$49,500	$4,500	$600	$45,000	$0	$45,000
$400	40	$400	260	$68,000	$8,000	$800	$60,000	$0	$60,000
$500	50	$500	250	$87,500	$12,500	$1,000	$75,000	$0	$75,000
$600	60	$600	240	$108,000	$18,000	$1,200	$90,000	$0	$90,000
$700	70	$700	230	$129,500	$24,500	$1,400	$105,000	$0	$105,000
$800	80	$800	220	$152,000	$32,000	$1,600	$120,000	$0	$120,000
$900	90	$900	210	$175,500	$40,500	$1,800	$135,000	$0	$135,000
$1,000	*100*	$1,000	*200*	$200,000	$50,000	*$2,000*	$150,000	$0	*$150,000*
$1,100	110	$1,100	190	$225,500	$60,500	$2,200	$165,000	$0	$165,000
$1,200	120	$1,200	180	$252,000	$72,000	$2,400	$180,000	$0	$180,000
$1,300	130	$1,300	170	$279,500	$84,500	$2,600	$195,000	$0	$195,000
$1,400	140	$1,400	160	$308,000	$98,000	$2,800	$210,000	$0	$210,000
$1,500	**150**	**$1,500**	**150**	**$337,500**	**$112,500**	**$3,000**	**$225,000**	**$0**	**$225,000**

There is no analog of **second-degree wage discrimination**, although perhaps the closest analogy would be job auctioning that occurs when undocumented workers are smuggled across the US-Mexican border by labor brokers who presumably charge higher fees to would-be migrants most desperate for passage to the USA. Because smuggling workers is illegal in both countries, it is likely that the market for the services of smugglers is not competitive. If connecting with a smuggler is done through informal networks, it is possible that smugglers could practice at least limited discrimination.

The most likely form of wage discrimination is **third-degree wage discrimination**, whereby members of different demographic groups – who have identifiably different alternative job opportunities – are offered different wage rates for ostensibly the same job. Why would an employer pay a man a higher wage than a woman would require to perform the same job? Phrasing the issue of inequality underscores the economic approach to wage discrimination. We have seen that a profit-maximizing firm which is a price taker in all input markets so that the ratio of factor price to marginal product is the same for all factors. An employer who does not exploit an opportunity to substitute low-wage female workers for (relatively) higher wage males must (1) believe that men are more productive than women are, (2) be pursuing goals other than maximum profits, or (3) face a positively sloped supply curve for labor services, so that the marginal cost of labor exceeds the wage rate paid for the last worker hired. Under the third explanation, the ability to separate the labor market according to the elasticity of supply of labor services allows the employer to equalize the marginal cost of male and female workers.

Now imagine a monopsonist who confronts two different supply curves for labor. The reservation wage rates for women are described by the equation $w_f = 4.50 + .05L_f$ while the reservation wage rate for men follows the equation $w_m = \$6.50 + .05L_m$. We also assume that the marginal revenue product of labor is $MRP_L = \$21.50 - .05L$. The fact that we do not indicate whether the last worker hired is male or female implies that men and women are equally productive (that is, perfect substitutes).

If men and women must receive the same wage rate, then the supply curve confronting the employer must satisfy the requirement that $w_f = w_m$, which implies

$$4.5 + .05L_f = 6.5 + .05L_m \rightarrow L_m = L_f - 40$$

The reservation wage confronting the employer is $w_r = \$4.50 + .05L$ for the first 40 workers hired, who are all women. When the wage rate reaches \$6.50, the two labor supply curves meld into $w_r = 5.50 + .025L$, causing the marginal cost of labor to become $MC_L = \$5.50 + .05L$. Setting the marginal cost of labor equal to the marginal revenue product of labor, the monopsonist solves for the quantity of labor that maximizes profit (employer surplus):

$$MRP_L = MC_L \rightarrow \$23.50 - .05L = \$5.50 + .05L$$

$$0.10L = 18 \rightarrow L_m = \frac{18}{0.1} = 180$$

$$w_r = \$5.50 + .025(180) = \$10.00$$

$$MRP_L = 23.50 - .05(180) = \$14.50$$

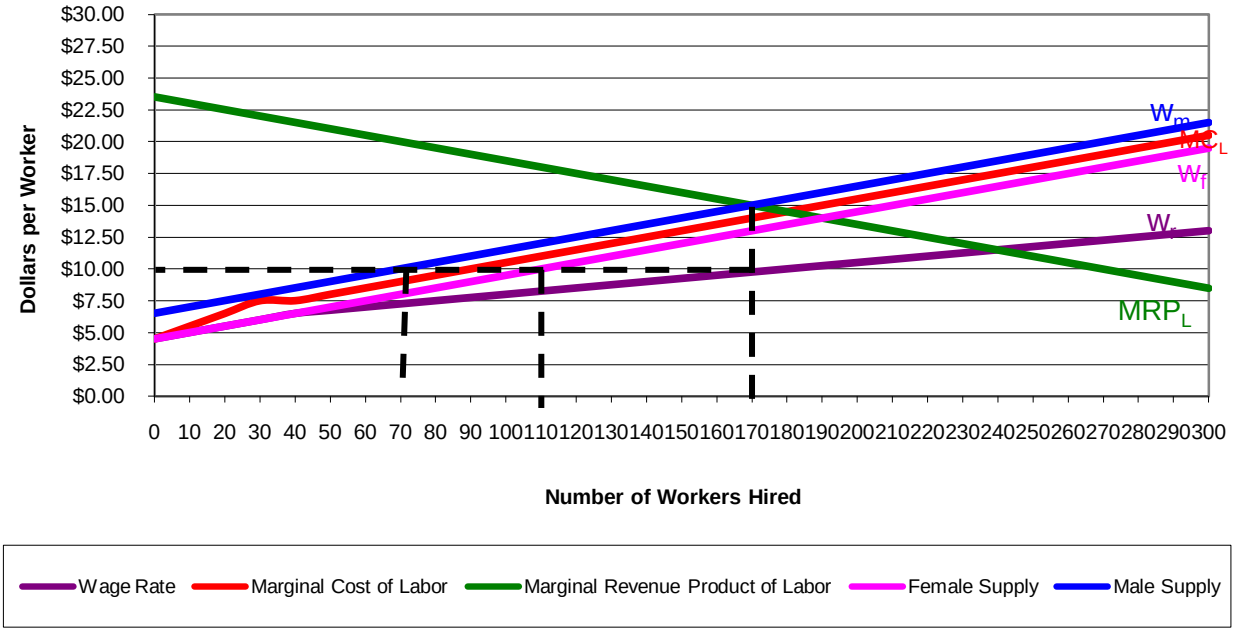
$$\text{Employer surplus} = \tfrac{1}{2}(23.50 - 14.50)180 + (14.50 - 10)180 = \$810 + \$810 = \$1620$$

$$\text{Gender breakdown: } L_m + L_f = L_m + L_m + 40 = 180 \rightarrow L_m = 70; L_f = 70 + 40 = 110$$

$$\text{Male surplus} = \tfrac{1}{2}(\$10 - 6.5)70 = \$122.50; \text{Female surplus} = \tfrac{1}{2}(10 - 4.5)110 = \$302.50$$

Figure 13-5 shows the employment and wage combination that maximizes profit for the monopsonist that cannot practice wage discrimination. The reservation wage curve is obtained by setting the wage rate for men and the wage rate for women equal to each other and summing the quantities of labor supplied. The reservation wage schedule gives rise to the marginal cost of labor curve. The marginal cost of labor intersects that marginal revenue product of labor when 180 workers apply for jobs and are hired. The market clearing wage rate for 180 workers is \$10 per hour; at this wage rate, 110 women and 70 men apply for jobs. The employer surplus is the triangle between \$23.50 and \$14.50 from 0 to 180 employees, plus the difference between the marginal revenue product (14.50) and the wage rate, times the number of workers hired. The female surplus is the area of the triangle ½(10 – 4.50)x110; the employer surplus is the area of the triangle ½(10-6.5)x70.

Figure 13.5: No Wage Discriminaton



If the monopsonist were able to pay men and women different wage rates, it would set the marginal cost of labor for each gender equal to the common marginal revenue product and solve for the optimal quantity of labor, and then pay each worker the reservation wage of the last person hired from that gender.

$$MC_f = MC_m \rightarrow 4.5 + .1L_f = 6.5 + .1L_m \rightarrow .1L_m = -2 + .1L_f \rightarrow L_f = L_m - 20$$

$$\text{Since } L = L_f + L_m = L_m + L_m - 20 = -20 + 2L_m \rightarrow L_m = \frac{L-20}{2} = .5L - 10$$

$$MC_L = 6.5 + .1L_m = 6.5 + .1(.5L - 10) = 5.5 + .05L$$

$$MC_L = MRP_L \rightarrow 5.5 + .05L = 23.5 - .05L \rightarrow .1L = 18; L_m = 180$$

$$L_m = .5L - 10 = 80; L_f = L_m + 20 = 100$$

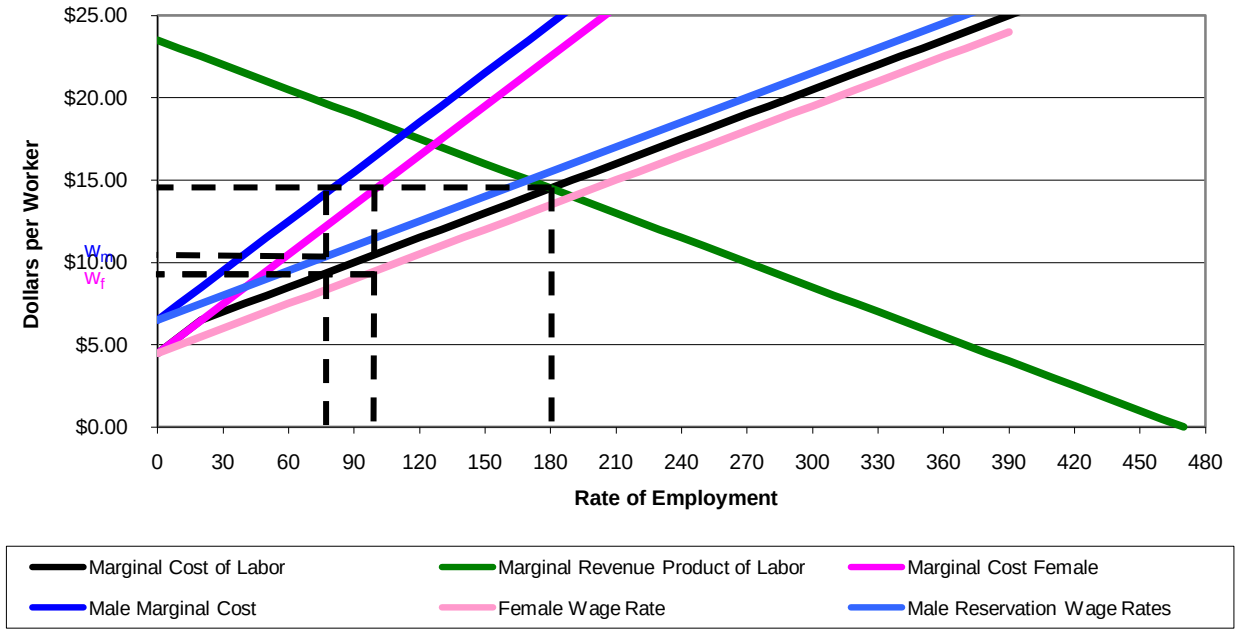
$$w_m = \$6.50 + .05(80) = \$10.50; w_f = \$4.50 + .05(100) = \$9.50$$

$$\text{Employer surplus} = \tfrac{1}{2}(23.50 - 14.50)180 + (14.50 - 10.50)70 + (14.50 - 9.50)110 = 810 + 280 + 550 = \$1640$$

$$\text{Male Surplus: } \tfrac{1}{2}(\$10.50 - 6.50)70 = \$140; \text{ Female Surplus} = \tfrac{1}{2}(9.50 - 4.50)110 = \$270$$

Wage discrimination keeps the employment level constant (this is not always the case), and increases the wage rate for male workers (whose labor supply is less elastic) and lower wage rates to female workers (whose labor supply is more elastic). Wage discrimination increases the employer surplus and the surplus for male workers, while reducing the wage rate for female workers. This outcome is shown in Figure 13-6.

Figure 13-6: Thrid-Degree Wage Discrimination



Employer Discrimination, Jim Crow, and the Civil Rights Act

In the absence of monopsony power, discrimination by employers tends to increase production costs. According to Gary S. Becker of the University of Chicago, employer discrimination in a competitive labor market constitutes a deviation from profit maximizing behavior.[2] Becker assumes that employers with a **taste for discrimination** behave as if the **psychic cost** of hiring a black person exceeds their wage rate.[3] In Figure 13-7, a discriminating firm on the right prefers to hire white workers at a higher wage rate than (equivalent) blacks would require, thereby incurring a higher cost of production than the non-discriminating firm on the left. Other factors constant, the discriminating firm would earn lower economic profit, or incur economic losses, relative to the non-discriminating firms. Exposed to market competition, there is no way that the discriminating firm could survive. It follows that racial discrimination could persist only if the forces of market competition were suppressed. This is precisely the effect of **Jim Crow laws**, which explicitly made it illegal for blacks to mix with whites in the market place or in other social institutions (shifting the average cost curve of the efficient firm to ac_{jc}). In 1896 the United States Supreme Court ratified the practice of racial segregation in *Plessey vs. Ferguson*, wherein the Supreme Court, very hypocritically, ruled that separate accommodations for blacks and whites did not violate the U. S. Constitution, specifically the Fourteenth Amendment's prohibition against such discrimination:

> Section 1. All persons born or naturalized in the United States and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of

[2] Gary S. Becker, *The Economics of Discrimination*, 2nd ed. (Chicago: Chicago University Press, 1971).
[3] Lester C. Thurow in *Poverty and Discrimination* (Washington, D.C.: The Brookings Institution, 1969) develops an alternative model based on the desire to maintain a social distance between whites and blacks, rather than a physical distance. This approach is probably more consistent with a taste for discrimination against women.

citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws.[4]

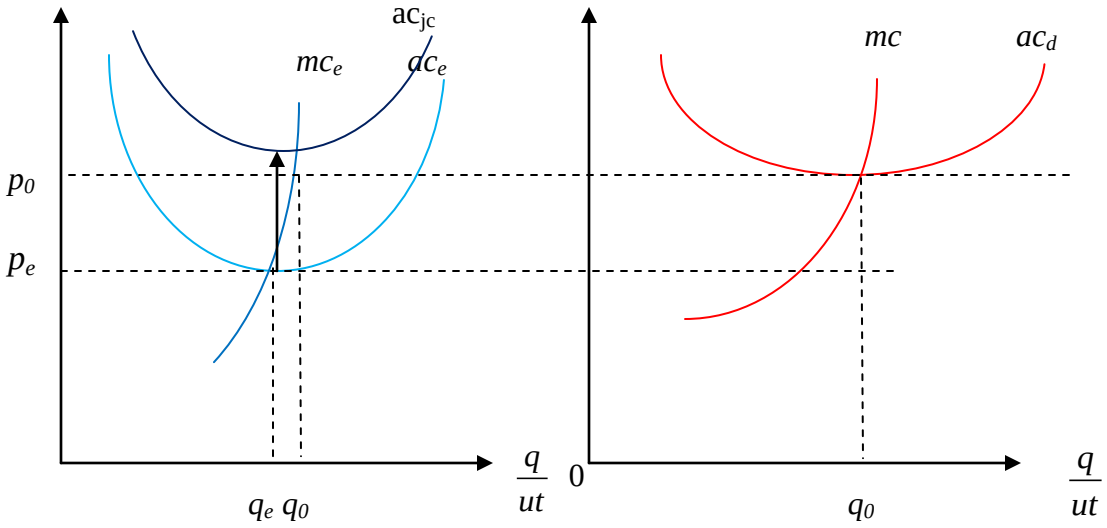


Figure 13-7a: Non-discriminating Firm Figure 13-7b: Discriminating Firm

Worker Certification and Labor Cartels

Neoclassical theory of competitive labor markets is based on the simplifying assumption that both employers and workers have perfect information about worker productivity. For many jobs, an employer can determine a job applicant's productivity only after (s)he has been hired. While the job seeker has better information about his/her ability to perform a job, the job seeker has an incentive to exaggerate his/her qualifications. Employers typically use productivity proxies – previous job experience, formal education, letters of recommendation –sources which can also be biased. For instance, job seekers who are willing to leave their current job for a new one are either unqualified for their current job, or undervalued by their employer. Recall this is the problem of **adverse selection** – that a selection procedure may unintentionally select for the "wrong" group of workers. Given scarce and unreliable information, employers may rely on prejudice – literally prejudging a job applicant's productivity by apparently irrelevant personal characteristics. An employer may believe that women are more likely to quit their job for marriage and family; as a result, the employer hires women only for high-turnover jobs. When women (and a fewer number of men in those positions) quit, employers see this as a vindication of their belief.

In some occupations – medicine and law – prediction of a practitioner's qualifications prior to employment is thought to be an important source of consumer protection. As we shall see, certification of worker qualifications can also be an impediment to the functioning of a competitive labor market. As an illustration, consider the medical profession. During the 1800's, most physicians learned their trade as apprentices. With a large number of apprentices completing their training every year, the market for physicians' services could be considered competitive. This meant that a person's knowledge and skill at healing would be dem-

[4] http://caselaw.lp.findlaw.com/data/constitution/amendment14/

onstrated in his or her success at treating patients. It was possible to claim training that one did not have, or to complete apprenticeship with a physician who was himself a quack. Eventually the least qualified would leave medicine if their earnings as a physician fell below their earnings in an alternative career– typically to undertaking or taxidermy. Competent physicians found that patients distrusted physicians in general because of the possibility that a self-styled physician would actually be a quack. Individual victims of medical malpractice have little incentive or opportunity to communicate their experiences to other potential victims. Suing for malpractice could become a legalized form of extortion, slandering both the competent and the incompetent.[5]

Under pressure from the American Medical Association (AMA), states passed occupational licensing requirements stipulating that physicians graduate from AMA accredited medical schools and pass AMA approved standardized competency exams. The economic effect of this licensing procedure made the AMA into a physician's cartel; the ability to accredit medical schools and write medical exams gives the AMA direct control over the market supply curve for physicians.[6] As in the granting of patents for inventions, the attempt to create property rights to physicians' reputations "solves" the problem of property failure with market failure – monopoly.

The adverse consequence of a labor cartel based on occupational licensing is that an increase in the demand for labor will not automatically result in an increase in the quantity of labor supplied, even when wage rates rise. In Figure 13-8 I depict two different supply curves, S_c is the competitive supply curve, and S_m is the supply curve under the control of the AMA. First, the competitive supply curve is positively sloped at all wage rates; as the wage rate earned by physicians rises, more students enter medical school and eventually the equilibrium number of physicians increases. By contrast, the monopoly supply curve S_m reflects a smaller number of physicians offering labor services at every wage, and at wage w_m^0, the market supply curve bends backwards. The consequence is that an increase in the demand for health care – say, due to aging Baby Boomers which shifts the demand curve from D_0 to D_1 – the quantity of health care supplied may actually decrease. There will be higher paid – but stressed out – physicians allocating a reduced amount of health care to those who can afford it.

In 1993 Dr. Alice Rivlen, director of President Clinton's Office of Management and Budget (later its director) spoke to the UNLV's economics department at the behest of her University of Maryland classmate, Dr. Keith Schwer, former director of UNLV's Center for Business and Economic Research. After her brief presentation defending the Clinton Administration's health care proposal – basically a plan to extend insurance coverage and set medi-

[5] My consulting firm, *Thomas Carroll and Associates*, has estimated damages in medical malpractice cases. As an economist, it is not my job – nor am I competent – to determine whether a physician's services constituted malpractice, a form of *tort*. I estimate the lost earning capacity and the present expected value of the cost of caring for the (alleged) victim. I have been involved in several catastrophic injury cases that render the victim totally disabled – brain damage, cerebral palsy, quadriplegia – whose cost of care can run $250,000 per year over a normal life expectancy. Imagine the options of a young couple whose child suffered anoxia at birth, whose cost of care has a present expected value of $14 million. Their only option is to sue the physician; a national system of catastrophic medical insurance – designed to cover the cost of severe injury – could go a long way toward the elimination of illegitimate malpractice suits.

[6] The classic article on the physicians' cartel is Reuben A. Kessel, "Price Discrimination in Medicine," *Journal of Law and Economics* (October 1958), pp. 20-53.

cal price controls. After quickly scribbling a supply-and-demand diagram on the back of a napkin, I asked her "If the problem with health care is that the price is too high and the quantity is too low, which curve should we shift?"

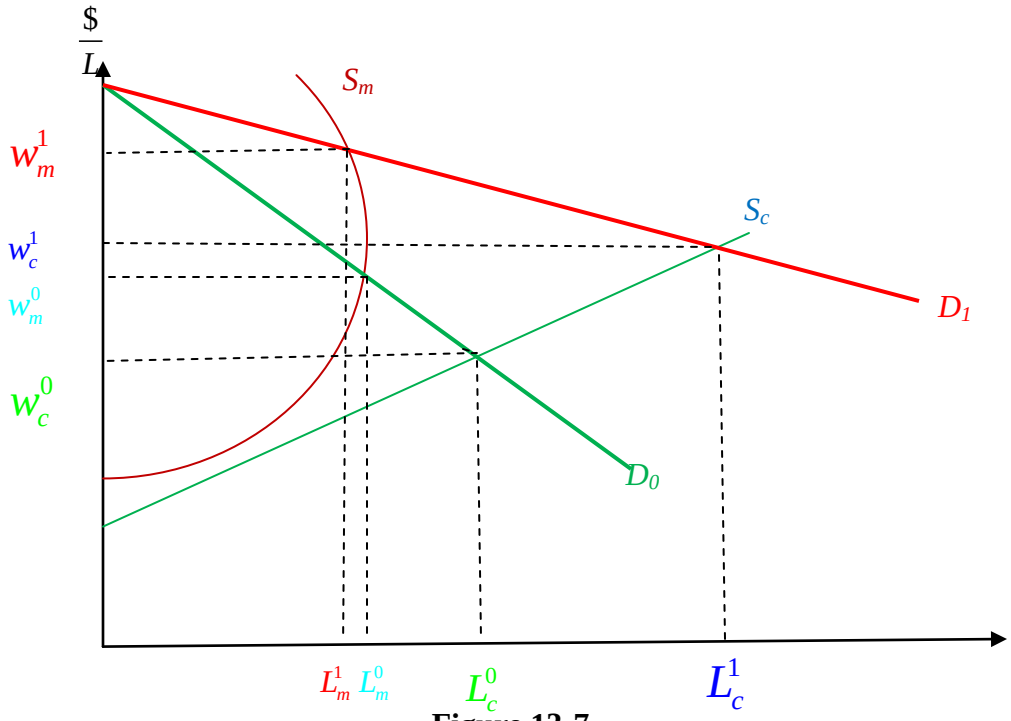


Figure 13-7

Wage Adjustment in Closed (S_m) and Competitive (S_c) Medical Labor Markets

Labor Cartels and Job Discrimination

In the absence of monopsony, as we have seen, sex or racial discrimination by employers causes higher production costs and lower profits. In a competitive market (e.g., a market without Jim Crow laws), employer discrimination will dissipate as employers with a taste for discrimination were replaced by efficient, profit-maximizing employers. Yet there are undeniable wage differentials between white males and women and minorities (see Table 13-3). As we saw in the previous section, members of an occupation can raise their own wage rate by restricting the number of people who are allowed into the market. This is **job discrimination**, whereby advantaged workers manage to exclude others (the disadvantaged) from competing with them. The resulting **labor cartels** can take the form of professional associates (the AMA) or craft unions (unions which represent the interests of a particular craft or occupation).

The model of a job-discriminating cartel is straight forward. In Figure 13-8, the competitive wage rate for, say carpenters, would be set at w_c where labor supply curve S_c intersects the labor demand curve D_L. As we have seen, the competitive equilibrium wage rate maximizes employment, as well as the sum of the employer surplus $\frac{1}{2}(w_{max} - w_c)L_c$, and the worker surplus $\frac{1}{2}(w_c - w_{min})L$. When the competitive wage rate prevails, the only way workers can increase the wage rate is by increasing the demand or by reducing supply. In Figure 13-8, the union supply curve is S_u, which intersects the labor demand curve at wage rate w_u

and employment level L_u. The fundamental problem for a labor cartel is suppressing the labor surplus, which at wage rate w_u equals the number of people who would like the job (e.g., applicants for union apprenticeships or medical school) and the number who are allowed into the union.

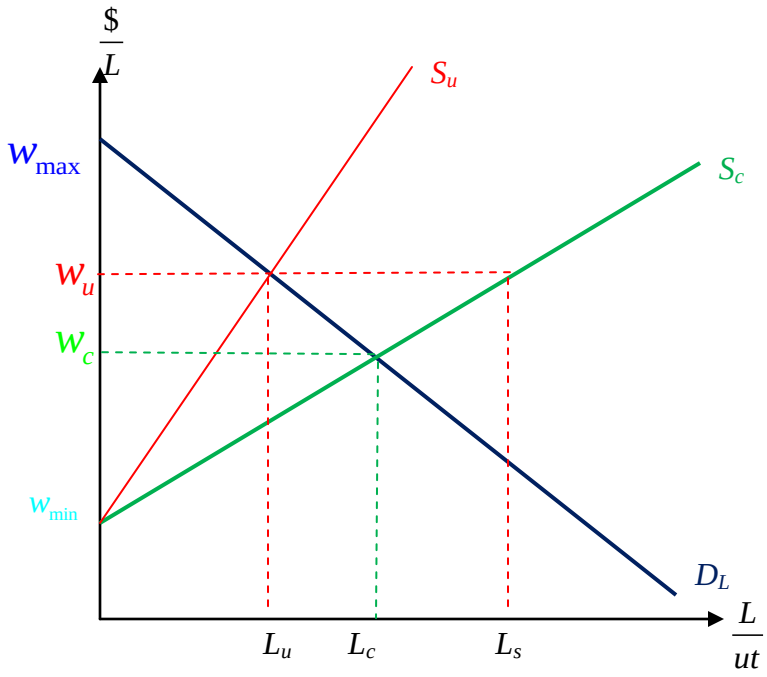


Figure 13-8: The Labor Cartel

There are several different solutions to the labor cartel's job-rationing problem. If the officials of the union or professional association wished to maximize their own wealth, the logical approach would be to **auction** the available jobs to workers willing to bid the highest price, say their union dues. Recall that the labor supply curve shows the reservation wage for the last worker applying for jobs in a particular occupation. For instance, suppose that plumbers in an isolated metropolitan area like Las Vegas confronted a marginal revenue product curve given by $MRP_L = \$5{,}000 - 10L$, where L is the number of plumbers hired on a monthly basis. We also imagine that the plumber's reservation wage is given by the equation $w_r = \$500 + 5L$, where both MRP_L and w_r are measured on a monthly basis. We can find the competitive equilibrium employment rate by setting MRP_L equal to w_r and solving for L_c:

$$w_r = MRP_L \rightarrow 500 + 5L = 5{,}000 - 20L$$

$$25L = 4{,}500 \rightarrow L_c = \frac{4{,}500}{25} = 180$$

$$w_r = 500 + 5(180) = \$1400; MRP_L = 5{,}000 - 20(180) = \$1400$$

At this wage rate, the employer surplus is ½(5000-1400)(180) = \$324,000. The plumbers' surplus is ½(1400 – 500)(180) = \$81,000. In a world where "more for me" is the operational definition of fairness, it is easy to understand that plumbers would delight in a labor union that promised higher wage rates. What they don't know is that the plumbers' union organizers have their own interests at heart. Having glanced at a microeconomics textbook, the organizers know that the maximum that anyone would bid for a job is the difference between the wage offer and his/her reservation wage. Hence, the reservation wage can be considered the *marginal cost* of

adding another worker. The union's marginal revenue is the derivative of total wage payments (along the demand curve) with respect to the number of workers admitted to the union. In this example,

$$\frac{\Delta(MRP_L L)}{\Delta L} = \frac{\Delta\left(5000L - 20L^2\right)}{\Delta L} = 5000 - 40L$$

Setting this "marginal wage" equation equal to the reservation wage equation allows the union organizers to maximize their dues "profit":

$$MW = w_r \rightarrow 5000 - 40L = 50 + 10L$$

$$50L = 4500 \rightarrow L_u = \frac{4500}{50} = 90$$

$$w_u = MRP_L(90) = 5000 - 20(90) = \$3200; w_r = 500 + 10(90) = \$640$$

$$\text{Dues} = w_u - w_r = \$3200 - 640 = \$2,560$$

$$\text{Union surplus} = (\$2,560)(90) = \$230,400$$

$$\text{Employers' surplus} = \tfrac{1}{2}(5,000 - 3200)(90) = \$81,000$$

$$\text{Workers' surplus} = \tfrac{1}{2}(640 - 500)(90) = \$6300$$

The largest component of this job-rationing solution accrues to the union organizers, with both employers and plumbers worse off as a result. Probably the closest historical example of this type of job rationing was the behavior of the Teamsters' Union under the late Jimmy Hoffa Sr. Like the producers' cartels, these exploitive labor cartels are illegal, as evidenced by the long battle between the Teamsters and Bobby Kennedy, the U. S. Attorney General between 1961 and 1964. Note that the total surplus, $230,400 + $81,000 + $6,300 = $317,700, which is smaller than the total surplus under competitive market conditions.

Another obvious approach is **nepotism**, showing favoritism to relatives and/or close friends in allocating jobs. For a craft union to survive, the union must keep the good will of the union members. Allowing union members to sponsor their sons, nephews, and other friends for apprenticeship programs rations the number of jobs available and allows members to be altruistic towards friends and family. If there are additional training slots available, the union can ration these by examination. If members of a craft union tend to be white males, it follows that their sons, nephews, and young male friends are also likely to be white males as well; racial and gender discrimination can be inadvertent. This approach to rationing will be particularly useful when the union has **closed shop** control over jobs.[7]

[7] Closed shops require that a job applicant be a union member as a condition of employment, in contrast to union shops that require workers to join labor unions after they are hired. In the former case, the union decides who joins the union, and hence, who is hired. In the latter case, the employer decides who is hired, and hence, who joins the union. The National Labor Relations Act of 1938 allowed unions to negotiate for either closed shop or union shop contracts, in order to accommodate the requirement that a union represent all workers in a bargaining unit, once the union receives majority support. The 1947 Taft-Hartley Amendments to the NLRA made closed shop contracts illegal, and allowed states to outlaw union-shop contracts by passing "right to work laws." Ironically, Nevada is a right to work state; in order to get a job with a union Strip property, a worker must get on the union hiring list, which is a *de facto* closed shop arrangement.

With union shop contracts, employers decide which workers to hire, but agree that employees must join the union as a condition of continued employment. Obviously, the employer will wish to hire the most qualified job applicants, unless those employers have a taste for discrimination that a unionized market may protect from competition with non-union firms. This prospect has led some economists to predict that while union workers tend to earn more than non-union workers; since employers would hire the same job applicants with and without unionization, that unions do not have a positive effect on the earnings of individual workers.

Collective Bargaining and Bilateral Monopoly

After our largely negative analysis of labor cartels, you might infer that economic analysis proves that labor unions have an adverse effect on economic efficiency. It turns out, not always. One of the most ironic and controversial predictions of microeconomic theory is the **general theory of the second best**, [8] which implies that while the best market type is perfect competition, if there is monopoly on one side of the market, the *second best* market type is **bilateral monopoly** – that is, a monopsony employer and a labor union.

Figure 13-9 shows a monopsony firm maximizing profit (employer surplus) by hiring L_m workers at wage rate w_m. For simplicity we again assume that there is no wage discrimination. Recall that the reason why the monopsonist hires only L_m workers, rather than L_c workers is that the marginal cost of labor exceeds the wage rate by the wage increase that must be given to workers willing to work at lower wage rates when additional workers are hired:

$$MC_L = \frac{\partial(wL)}{\partial L} = w + L\left(\frac{\partial w}{\partial L}\right).$$

Under first degree wage discrimination, $\frac{\partial w}{\partial L} = 0$, so the firm would hire the efficient number of workers. Suppose that the L_m workers employed by the monopsonist decided to organize into a labor union to bargain collectively with their employer. The implied threat is: raise everyone's wage rate or we all stop work. This threat is credible (in a game-theory sense) because the employer has already hired everyone willing to work at wage rate w_m or less. But how much should the union demand? If successful, the union will negotiate a binding contract with the employer stipulating a minimum wage rate the employer can pay. Hence, the marginal cost of labor would equal the contract wage until all workers willing to work for that wage rate or higher had been employed. Looking at Figure 13-9, the market clearing wage rate for L_m workers is w^*. Any wage rate above w^*, some workers who struck for higher pay would lose their jobs – hardly compatible with union solidarity.

[8] Richard G. Lipsey and Kelvin Lancaster, "The General Theory of the Second Best," *Review of Economic Studies* 24 (1956-57), 11-32. The theory of the second best is similar to John Kenneth Galbraith's concept of countervailing power, introduced three years earlier in his *American Capitalism: The Concept of Countervailing Power* (Boston: Houghton-Mifflin, 1953).

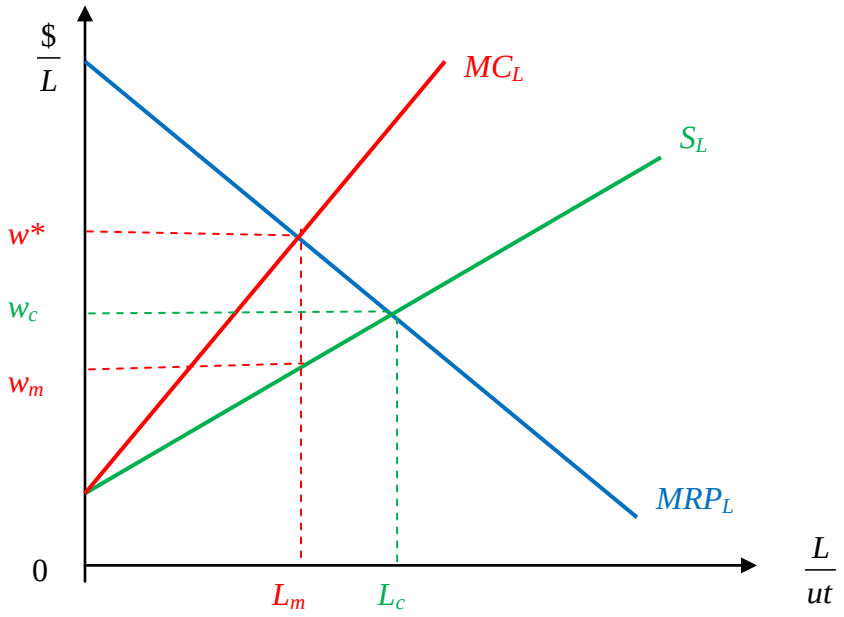


Figure 13-9: Monopsony and Bilateral Monopoly

The best wage rate for the employer is still w_m, because that wage rate maximizes employer surplus. Typically, the employer and the union negotiate and threaten (strikes or lockouts), until an agreement is struck. If the union failed (as happened in the Air Traffic Controller Strike during the Reagan Administration), the market would return to its monopsony wage/employment outcome. If the union totally prevailed, employment would remain at L_m and the union (and its members) would absorb the monopsony profit $(w^* - w_m)L_m$. The general theory of the second best kicks in when the two sides compromise. Depending on the bargaining power of the employer and the union, the contract wage will lie somewhere between the monopsony wage w_m and the cartel wage w^*. If the contract wage is set above w_m, employment will expand along the labor supply curve; this is because a union contract sets the marginal cost of labor at the contract wage until all workers willing to work are hired. Since the competitive wage rate w_c is within the **bargaining range**, it is *possible* that the two sides could compromise on w_c, the post-negotiation employment of L_c would maximize the sum of employer and employee surplus.[9] If the contract wage were set higher than w_c, employment would be set by the MRP_L curve (and the union would have to cope with a labor surplus), but employment would nevertheless exceed the monopsony level of L_m.

We find ourselves with two contradictory predictions. Introduce a labor union into an otherwise competitive labor market and wages can increase only if employment decreases. Introduce a labor union into a market dominated by employer monopsony and it is possible to increase both the wage rate and employment. Most likely, the two combatants care only about their own interests. Employers do not like unions because they reduce profits. Union organizers like unions as a source of income; union workers like unions as long as their bene-

[9] The employer would maximize profit by hiring workers as long as $MRP_L > MC_L$. As long as the contract wage is less than w^*, the marginal cost of labor would decrease, even though the wage rate (and hence employer surplus) would decrease.

fits exceed their costs. The ultimate issue for economists is economic efficiency. When they reduce employment, labor cartels decrease output and increase consumer prices, reducing consumer surplus as well as producer-employer surplus. When they counteract monopsony power and increase employment in the former monopsony sector, labor unions increase output, decrease consumer prices, and increase consumer surplus.

Figure 13-10 shows the effect of a labor cartel on non-union wage rates. We assume that, in the absence of unions, market **A** and market **B** would pay equal wage rates; that is, we assume that there are no compensating wage differentials. Hence, both markets would have a non-union equilibrium wage rate of w_0, with employment of L_{A0} and L_{B0}, respectively. If the workers in market **A** successfully unionize and wage the wage rate in market **A** to w_u, employment in market **A** declines to L_u. The workers displaced from market *A* migrate to the non-union sector, here represented by market B. When the supply curve in market B shifts from S_{B0} to S_{B1}, driving the wage rate in market B to w_{B1}. Hence, the labor-cartel model of labor unions predict that as union wage rates increase, non-union wage rates decrease, *ceteris paribus*.

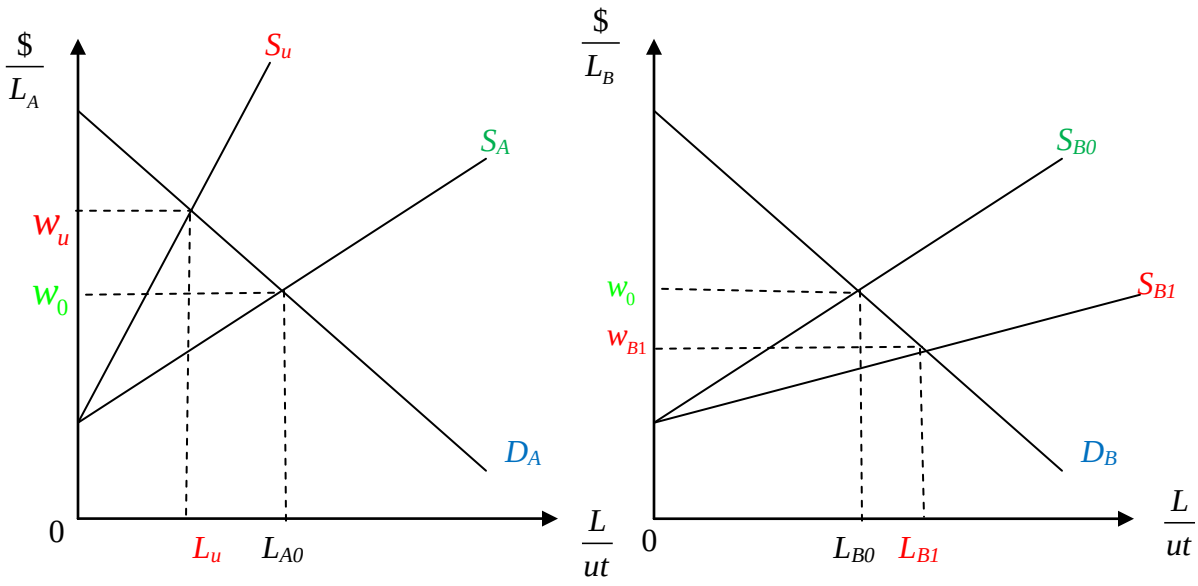


Figure 13-10: Labor Cartels and Nonunion Wage Rates

In Figure 13-11 we imagine that market A is dominated by a monopsonist, for whom employment L_m and w_0 represent the profit-maximizing employment level and wage rate. In market B we set the equilibrium wage rate equal to w_0, again based on the assumption that there is no compensating wage differential. We assume that collective bargaining increases the wage rate in market A from w_0 to w_A, which causes employment to expand to L_{A1}. Presumably the additional workers migrate from market B to market A, shifting the supply curve in market B from S_{B0} to S_{B1}, which *increases* the wage rate in market **B** to w_B. It is likely that $w_B < w_A$ since union workers must pay dues to the union that represents them. Nevertheless, under the bilateral monopoly model of labor unions, collective bargaining can increase both union and nonunion wage rates.

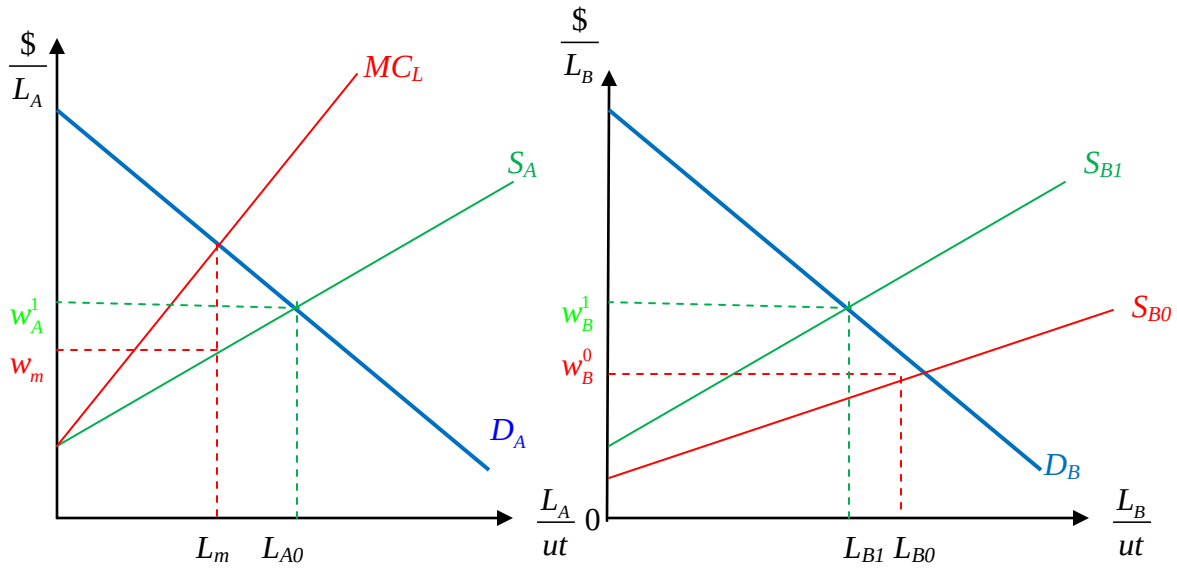


Figure 13-11: Collective Bargaining and Nonunion Wage Rates

Right-to-Work and Nonunion Wage Rates

Economists often use **natural experiments** to provide empirical tests of competing economic theories. Unlike the physical sciences, economists rarely conduct controlled experiments[10] to determine which of two competing theories better predicts real-world events. Econometricians typically investigate actual events and use multiple regression analysis to control for variables that would typically be held constant in a controlled experiment. If we are to investigate the impact of union activity on non-union wage rates, we need some *exogenous* influence on union strength that allows us to contrast the *indirect effect* of union activity on nonunion wage rates. It turns out that Congress provided the setting for a natural experiment in 1947 (the year I was born; prophetic?) when it passed (over President Truman's veto) the Taft-Hartley Amendments to the 1935 National Labor Relations Act (NLRA). The NLRA required that employers bargain in good faith with any labor union that received more than 50% of workers' votes in a representation election. For its part, the union is required to represent all workers at a company or other unit that voted in favor of representation. Organized labor complained that without mandatory union membership contracts, workers would attempt to **free ride** on union benefits, without striking or paying union dues. As a compromise, the NLRA allowed unions to negotiate for **close shop contracts**, that require workers to join unions as a condition of hiring, or **union shop contracts**, that require workers to join unions as a condition of continued employment. Without such provisions in the collective bargaining agreement, workers would be free to join a union or not at their own discretion.

After World War II, Republicans gained control of both houses of Congress and amended the NLRA to tip the scales more in favor of employers. The Taft-Hartley Act pro-

[10] The exception is the field of experimental economics which typically use students or other controllable groups to investigate game theory and consumer-behavior theory.

hibited closed shop contracts in all states, but allowed the states to decide whether to prohibit union-shop contracts. Since 1947 twenty-two states (all of which voted for George W. Bush in 2004[11]) have passed **right-to-work laws**. Right to work states are concentrated in the south (all states except the border states of West Virginia, Kentucky, Maryland and Delaware), the agricultural Midwest (North and South Dakota, Nebraska, Kansas and Iowa), and low-population density western states (Arizona, Utah, Nevada, Wyoming and Idaho). Figure 13-12 shows that between 1983 and 2010, there is a consistently higher proportion of workers in states which allow union-shop contracts than in the right-to-work states.[12]

Figure 13-12

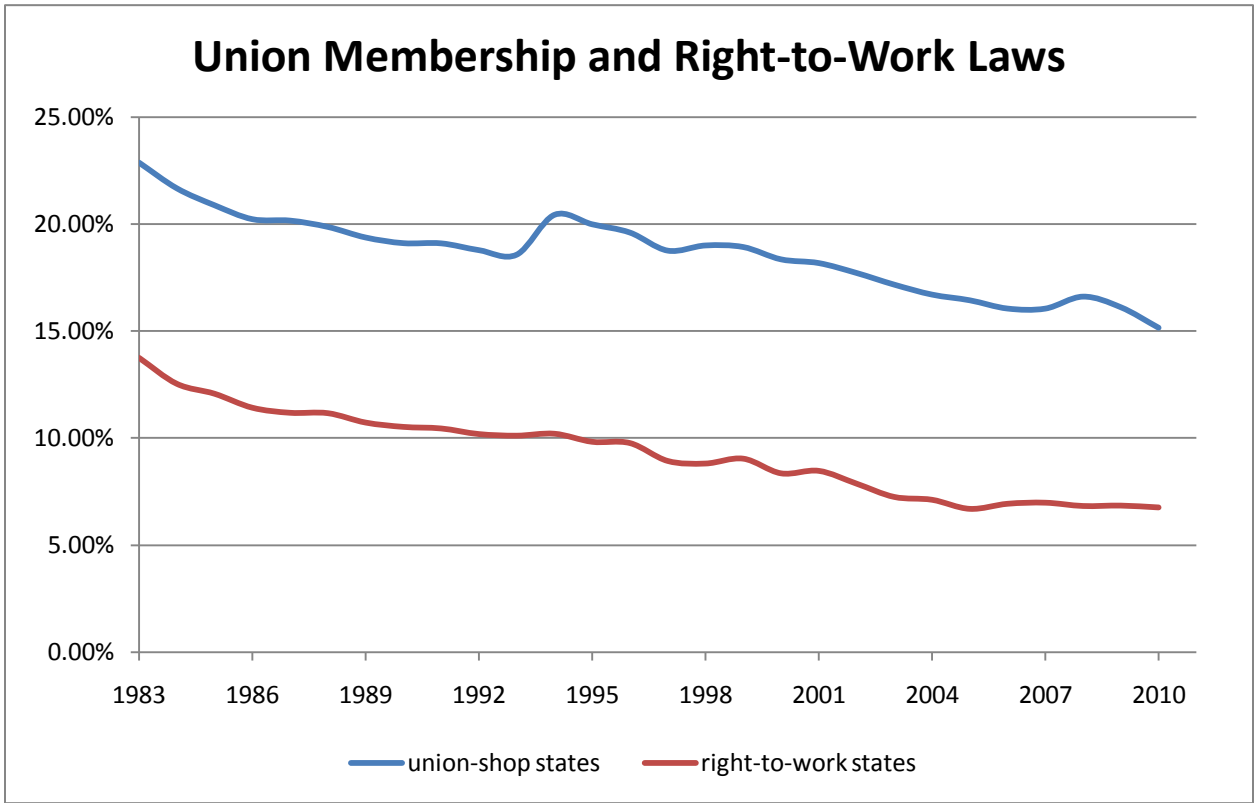


Figure 13-13 shows that the average union wage was actually higher in right-to-work states than in union-shop states from 1983-1986; adjusting for job type, age, education, gender and ethnicity, union members in right-to-work states earn an average of 3.76% lower wage rates than do union members in union-shop states. The evidence implies that laws that weaken labor unions actually decrease the wage rates of nonunion workers, but only by a modest amount. While this may come as a surprise, remember that a significantly lower proportion of workers belong to unions in right to work states. As with every other economic phenomenon, there are diminishing returns to union organizing. Where the costs of organizing are

[11] The only union-shop states that voted for McCain in 2008 were Alaska, Kentucky, West Virginia, and Missouri. Right-to-work states that voted for Obama included Iowa, Nevada, North Carolina, Florida, Virginia

[12] Using 4,828,706 observations from the monthly earner study of the *CPS* between January 1983 and December 2010, the probability that a worker in a right-to-work states was 9.8% less than in a union-shop state, controlling for age, education, gender, ethnicity, and a time trend.

greater – unions cannot negotiate for mandatory union membership contracts[13] – unions will organize first in those industries that generate the greatest gains for workers, and, not coincidentally, the highest dues. Hence, unions will organize until the marginal benefits of organizing equal the marginal costs.

Figure 13-13

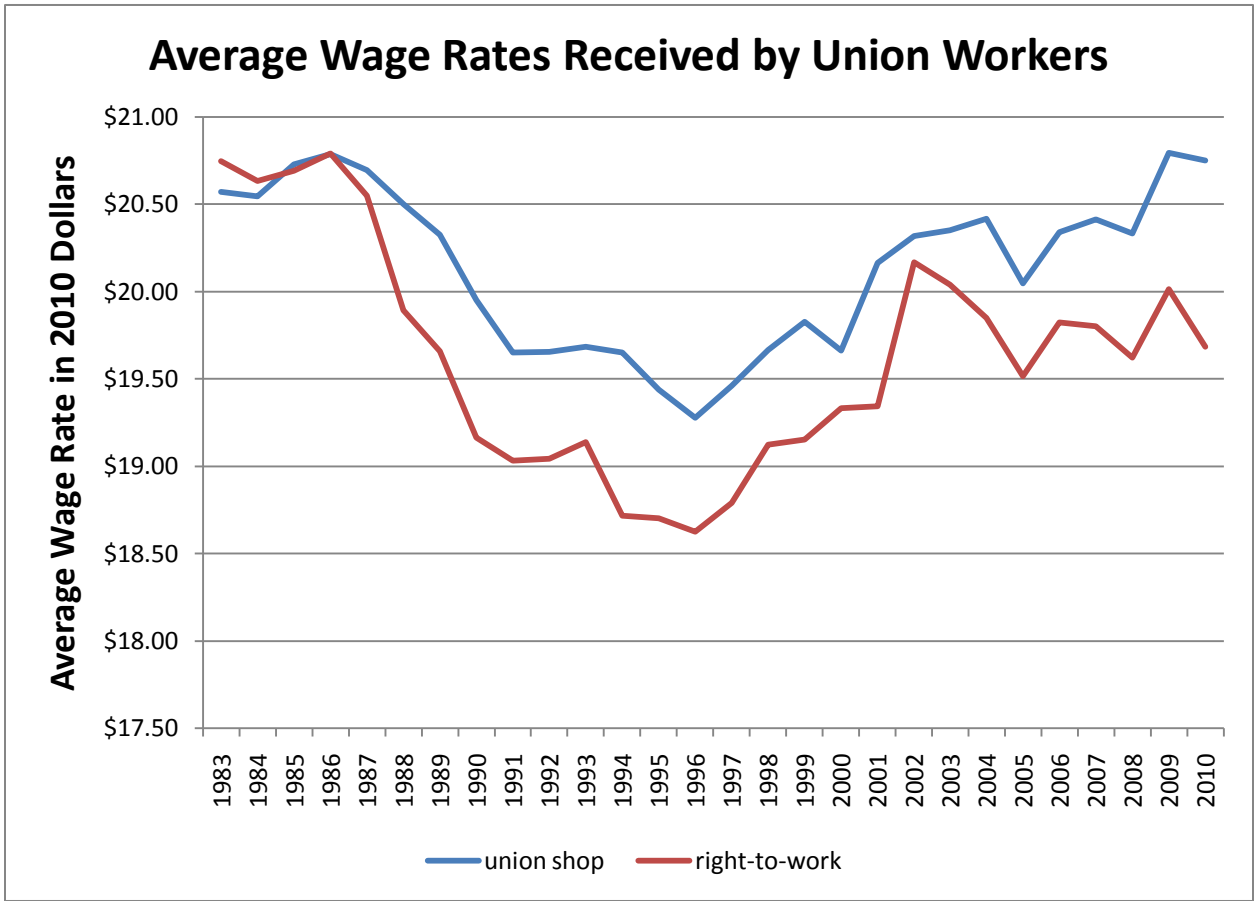
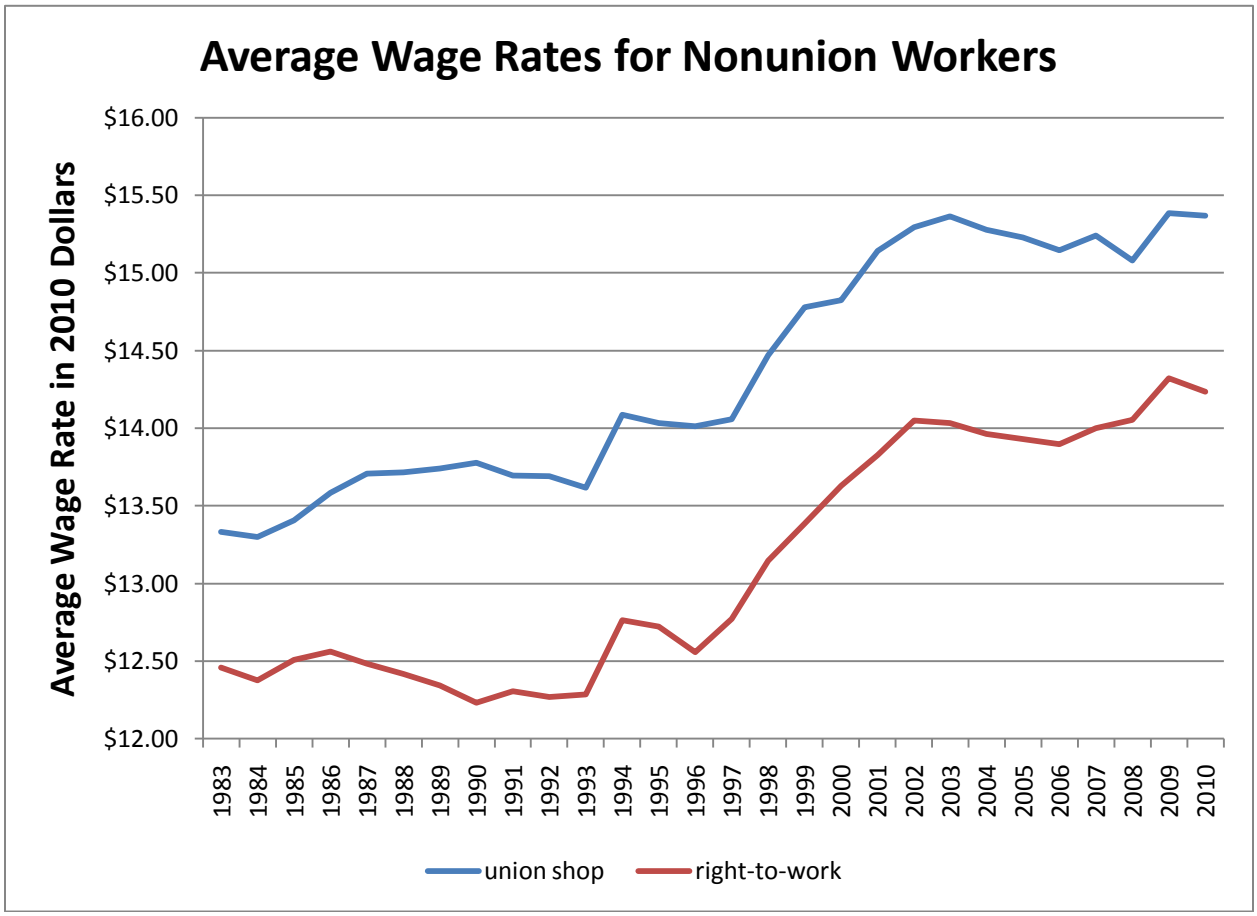


Figure 13-14 clinches the issue for this natural experiment. The average wage rates for non-union workers are consistently lower in right-to-work states.[14] Had there been a positive relation between the proportion of workers in unions (the proxy for union-bargaining strength) and the average wage rate for *non*-union workers, then we would infer that the union-cartel model better describes the economic reality. The finding that non-union wages are lower in states where unions are weak supports the bilateral or collective bargaining model of labor unions. Had there been no significant relation, we would infer that neither model describes the overall effect of unions on the wage rates of workers who do not belong to unions.

[13] As with everything economic, there are interesting exceptions. Nevada is a right-to-work state, where *de jure*, workers cannot be forced to join a union *after* being hired, the practices of the culinary union in Southern Nevada that operate as *de facto* closed shop state (at least in Clark County where 75% of Nevada's population resides).

[14] Average wage rates for non-union workers are 7.38% lower than in union-shop states, controlling for age, gender, ethnicity, education, occupation, and industry employment.

Figure 13-14



Minimum Wage Rates and Undocumented Workers: General Equilibrium in Action

In 2006 Congress passed and President Bush signed an increase in the federal minimum wage rate that had been $5.15 per hour. The minimum wage rate increased to $5.85 on July 24, 2007, and will increase to $6.55 on July 24, 2008, and $7.25 per hour on July 24, 2009. In the 2006 election voters in the state of Nevada increased the minimum wage to $1 above the federal minimum wage, although this was modified by the Nevada Legislature to a two-tier system, with a lower minimum wage rate for employers that offer health insurance benefits to employees. Little noticed was the prediction that by increasing the wage rate for American workers, Congress and the Nevada voters would encourage an increase in the employment of undocumented workers.

As economists we understand that people respond to incentives and that things are not always as they seem. Others forget that in order for minimum wage laws to be enforced, workers who are paid less than the minimum wage have to file a grievance. Undocumented workers do not complain when their employers violate minimum wage laws, since to bring attention to themselves invites deportation. We have seen that formal education has little or no effect on the earnings of workers who have a high school diploma or less. This is frustrating to low skill workers, who in the global economy, have to compete with low skill workers

around the world. Their reaction is to lash out with anger; others, particularly Republican Congressman Tom Tancredo and CNN commentator Lou Dobbs are willing to harness this anger to further their own agendas. There is evidence that this neo-fascist xenophobia infects the Republican electorate. Congress also passed a law to construct a 3,000 fence along the US-Mexican border; ironically, this fence will be financed with government bonds sold largely to foreign countries. While the fence will increase the cost of Mexican workers moving to higher paying jobs in the US, it will do nothing to stop American firms relocating their production to Mexico or other countries.

While precise counts of undocumented residents of the United States are difficult to obtain – both because undocumented workers fear deportation and many of their children are American citizens by right of birth – their number has been estimated at 12 million. Listen to talk radio and feel the seething anger against the "enemy in our midst." The state of Arizona recently enacted a law making it a state crime to be in Arizona without documentation of citizenship or permanent legal residence. My wife and I will not visit Arizona because she is a naturalized American citizen – she became an American citizen in 1957, at age 10, after her parents migrated (legally) from Canada in 1952. At the time that I write this many foreign governments are warning their citizens to avoid Arizona on their next visit to the USA. Many tourists and conventions have cancelled their reservations for Arizona hotels. It appears that Arizona will pay substantially for their dislike of non-Americans. The word for this behavior is **malevolence**: the willingness to incur a cost to make someone else worse off. An understanding of economics may not prevent malevolence, but at least we will understand that often it is the consequence of innocuous seeming laws like minimum wage laws.

Summary

1. The theory of wage and employment determination through market competition depends on five crucial assumptions: (1) many employers and many workers, (2) homogeneous labor, (3) profit-maximizing (non-discriminating) employers,(4) freely flexible wage rates, and (5) free entry and exit of employers and workers. Violating any of these assumptions gives rise to imperfectly competitive labor markets.

2. Monopsony power causes the employer to be aware of and to take account of the positively sloped labor supply (reservation wage) curve. Without wage discrimination, the marginal cost of hiring a worker equals that workers wage rate plus the wage increase for workers already hired: $MC_L = \frac{\partial(wL)}{\partial L} = w + L\left(\frac{\partial w}{\partial L}\right)$. The monopsonist maximizes profit by setting employment so that the marginal cost of labor equals labor's marginal revenue product, then paying the market-clearing wage rate for that quantity of labor.

3. A first-degree wage discriminating monopolist would pay each worker his or her reservation wage without having to increase wage payments to other workers. This would make the marginal cost of labor equal to each workers reservation wage. The profit-maximizing employment level under first-degree wage discrimination is where the reservation wage equals the marginal revenue product, which is the same as under wage competition. However, the entire surplus is the employer's surplus.

4. Under third-degree wage discrimination, the employer equalizes the marginal cost of labor in each sub-market (e.g., for men and women) to the marginal revenue product of labor, and then pays each group the reservation wage of the last worker hired. Wage discrimination would not be profitable under competitive conditions, since firms would substitute high wage workers for equally productive lower wage workers.

5. Job discrimination involves restricting the access of groups to particular jobs. For employers this practice contradicts profit-maximizing efficiency and(?) requires protection from the market forces. This was the role of **Jim Crow laws** in the south between the end of Reconstruction and the Civil Rights Act of 1964 and the Voting Rights Act of 1965.

6. Job discrimination is one form of employment rationing used by labor cartels to restrict labor supply and generate higher-than-competitive wage rates. Other forms of job rationing include job auctions which allow the labor cartel to obtain the monopoly profits, or setting job requirements above what is necessary to perform a job, which is consistent with employer job rationing (union-shop union contracts).

7. Approximately 60% of the wage gap between men and women can be attributed to wage discrimination and about 40% can be attributed to job discrimination, with virtually none of the difference being due to systematic productivity differences. Part of the wage gap between white, non-Hispanic males and black or Hispanic males is due to less human capital among minority males. Minority females generally suffer the lower wage rates of their gender and do not suffer additional discrimination because of their ethnicity.

8. Under collective bargaining a monopsony employer bargains with a monopoly union. According to the **general theory of the second best**, while competition on both the employer and employee sides of the labor market is best, the second best outcome is likely to be bilateral monopoly. Under bilateral monopoly, the union and the employer(s) negotiate a wage rate above the monopsony wage and below the cartel wage, which actually increases employment.

9. Labor cartels tend to depress the earnings of nonunion workers by reducing employment in the union sector. They depress nonunion wages when displaced workers shift the nonunion labor supply curve to the right. Bilateral monopoly which increases employment in the union sector has the opposite effect, attracting workers away from nonunion jobs, thereby decreasing labor supply in the nonunion sector and increasing the equilibrium wage rate.

10. Right-to-work laws provide a natural experiment to measure the effect of unionization on non-union wage rates. While union workers in right-to-work states earn about the same as union workers in union-shop states earn (as is the case with non-union workers covered by collective bargaining agreements), nonunion workers in right to work states earn significantly less than do nonunion workers in union-shop states.

Glossary

Backward-bending labor supply curve: For individuals, labor supply curves bend backwards (become negatively sloped) when income effects of wage increases offset the substitution effect. In closed labor markets, the market supply curve can also become negatively sloped when the number of workers offering labor services cannot increase and individual labor supply curves bend backwards.

Bargaining range: The range between the monopsony wage and the market clearing wage rate for monopsony-level employment. If collective bargaining results in a wage rate within this range, employment will increase as the wage rate increases, until the competitive wage, after which employment will contract (but still remain above the monopsony employment level).

Bilateral monopoly: A market with one buyer and one seller.

Jim Crow Laws: Southern state and local laws that mandated racial segregation; these laws were rendered invalid by the 1964 Civil Rights Act.

Job discrimination: The practice of restricting employment to particular ethic groups, as under Jim Crow segregation. While this practice is unprofitable for employers, it is one means by which labor cartels can reduce wage competition with the favored group.

Marginal cost of labor: Under competitive conditions, the marginal cost of labor is the wage rate (plus variable taxes and fringe benefits). Under monopsony, the marginal cost of labor is the wage rate plus the implied wage increase for workers with lower reservation rates.

Monopsony: A market with one buyer.

Wage discrimination: The practice of paying workers with different reservation wages different wage rates. While the practice is not profitable in competitive labor markets, it allows monopsonists to increase their profits by reducing the employee surplus.

Exercises

Indicate whether each of the following statements is true (agrees with economic theory), false (contradicts economic theory), or uncertain. Explain your answer.

1. A military draft is one way the government can avoid the economic costs of its monopsony power in the market for military recruits.

2. Military conscription that allows draftees to hire replacements (as was the case in the Civil War) is less efficient than a draft that requires service of all draftees.

3. If a craft union pushes the wage rate above the competitive level, a collusive agreement among employers to resist the power of the union will increase economic efficiency.

4. If male workers demand higher wages when they are managed by women than when they are managed by men, profit-maximizing employers will hire female managers only to manage female workers.

5. If an employer pays women a lower wage rate than he pays men for the same job, the firm must be a monopsonist.

6. First-degree wage discrimination is just as efficient as is an equivalent competitive labor market.

7. Whenever a labor union raises wage rates, consumer prices must increase as a result.

8. There is clear empirical evidence that labor unions are harmful to nonunion workers.

9. There is clear empirical evidence that competitive labor markets eliminate racial and gender wage differences.

10. Eliminating all illegal immigrants from the United States would represent an unambiguous improvement in the economic welfare of American citizens.

Answer each of the following questions in brief but complete essays, showing your calculations where appropriate.

11. In chapter 12 question 11, we encountered a reservation wage equation for plumbers given by $w_r = \$200 + 2L$, while the marginal revenue product for labor is $MRP_L = \$2000 - 2L$.
    a. Suppose that plumbers wish to form a cartel (labor union) to maximize total wage payments to plumbers. What would be the marginal wage income plumbers would be willing to pay plumbers? (Hint, transform the MRP_L equation to predict the change in wage payments with respect to the number of workers hired).
    b. What wage rate and employment level would maximize plumbers total wage payments?
    c. How many workers would apply for plumbers' apprenticeships (admission to the union) at the cartel wage?
    d. What level of union dues would suppress the labor surplus? Explain.

12. Instead, assume that Home Depot successfully monopolizes all the plumbing work in the market.
    a. Compute the marginal cost of labor equation for Home Depot
    b. What is the profit-maximizing employment level and wage rate for Home Depot, assuming that the plumbers' market remains competitive on the workers' side?
    c. If the plumber's union decided to negotiate with Home Depot, what would be the bargaining range for the two parties?
    d. If they "split the difference," what would the contract wage, level of employment, employers' surplus and employee's surplus be?
    e. Comment on the efficiency of the outcome to 12d with the outcome of 11d and 12b.

13. Comment: "When a large employer (e.g., a Wal-Mart) locates near a small town, the average wage rate in that town increases. Hence, monopsony does not exploit labor."

14. Since a minimum wage rate confronts employers, including monopsonists, with a horizontal supply curve for labor, increasing the minimum wage rate is a viable means of counteracting monopsony labor exploitation."

15. Comment on the following: "Government enforcement of union-negotiated conditions upon all employees in a bargaining unit insulates the union from competition in labor market. If employees were free to reach individual agreements with employers that depart from union-negotiated terms, the union's economic poser could be reduced and open-market solutions emerge. The cartel behavior of trade unions also results in the institutionalization of mediocrity in that very productive workers, whose output justifies higher wages than negotiated by the union, cannot, by law, be paid according to their productivity."[15]
    a. How does this argument compare to the usual argument that higher than competitive wage rates cause employers to hire the most qualified workers?
    b. Does the relevance of this argument depend on whether the labor market on the employer side is competitive or monopsonistic?
    c. How is this argument relevant to school teacher pay?

[15] James T. Bennett and Maunel H. Johnson, "Free Riders in U. S. Labour Unions: Artifice or Affliction?" British Journal of Industrial Relations (May 1978), pp. 161-162.