11: Regulating Labor

"The labourer is worthy of his hire."

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11.1: Introduction

Buying and selling labor is one of the most heavily regulated transactions in the modern economy. There are regulations about minimum wages, unionization, leaves of absence for child care, withholding of income taxes, collection of payroll taxes, unionization, racial discrimination, and special arrangements for handicapped workers.

The most important regulation idea that will come up in this chapter is the **unfunded mandate**. A mandate is a command (in Latin "mandamus" means "we command"). Often when the government wishes to accomplish something but does not want to pay for it, it commands individuals or companies to do it as a condition of being allowed to carry on with their employment or business. The potential for government failure is obvious: the government gets the credit for the action, but doesn't have to raise taxes. Yet there can be good reasons for unfunded mandates too, arising from market failures such as asymmetric information or externalities.

Before getting to employment regulation, though, let us start by distinguishing between direct demand and derived demand. **Direct demand** is demand for a good that yields the buyer direct satisfaction, while **derived demand** is demand for an input that is used to produce some other good. If you hire somebody to clean your house, you have direct demand for the labor. If you hire somebody to chop wood that you will sell, you have derived demand for the labor.

Demand for labor is usually derived demand, so before we analyze the effect of regulation, let us think about how derived demand works. Suppose a rug factory has two inputs, capital and labor. Instead of taking output, Q, as directly under the control of the manager, think of output as a production function, $Q(K,L)$, which has output increasing as capital or labor increase. We can write the factory's profit as

$$Profit = P(Q(K,L)) \cdot Q(K,L) - wL - rK, \tag{1}$$

where the rug price P is now a function of Q which is a function of K and L, and the prices of labor and capital are w and r. The factory must choose K and L to maximize profit. In choosing L and K, it is indirectly choosing Q. Let us start with labor. Taking the derivative with respect to L and setting it equal to zero yields

$$\frac{\partial Profit}{\partial L} = \frac{dP}{dQ}\frac{dQ}{dL}Q(K,L) + P(Q(K,L)) \cdot \frac{dQ}{dL} - w = 0, \tag{2}$$

so

$$\left(\frac{dP}{dQ}Q(K,L) + P(Q(K,L))\right)\frac{dQ}{dL} = w \tag{3}$$

The expression $\frac{dP}{dQ}Q(K,L) + P(Q(K,L))$ is marginal revenue, the same expression we found earlier in determining monopoly output. The expression $\frac{dQ}{dL}$ is the **marginal**

product of labor, the extra output from adding extra labor. Thus, we can rewrite the equation as

$$MR \cdot MPL = w. \tag{4}$$

To maximize profit, the rug factory is increasing the amount of labor it uses until adding just a little more, at cost w, would equal the increase in marginal revenue from the extra output that the labor would produce. This rate of increase of revenue from hiring more labor is known as the **marginal revenue product of labor**. If the output market is competitive, then $MR = P$ and profit maximization requires the firm to increase its labor till the value of the extra output from hiring more labor just equals the increase in the wage bill. The same reasoning implies that

$$MR \cdot MPK = r, \tag{5}$$

which says that the firm will keep hiring capital till the extra revenue it generates just equals the extra cost of buying the capital.

We will focus on labor, and on the labor-buying decision of a firm in a perfectly competitive market. Thus, the equation for the optimal choice of labor, $MR * MPL = w$, becomes

$$P \cdot MPL = w. \tag{6}$$

Think about how this factory's demand for labor will change if P or w changes. Start with an essential fact: the marginal product of labor (MPL) falls as more labor is used. This is a consequence of diminishing returns. The MPL is the rate of increase in rug output if the factory increases L but everything else stays constant, including K. Increasing L without increasing K leads to diminishing returns to labor, so the MPL falls as L increases. Starting with more labor results in less value from further increases.

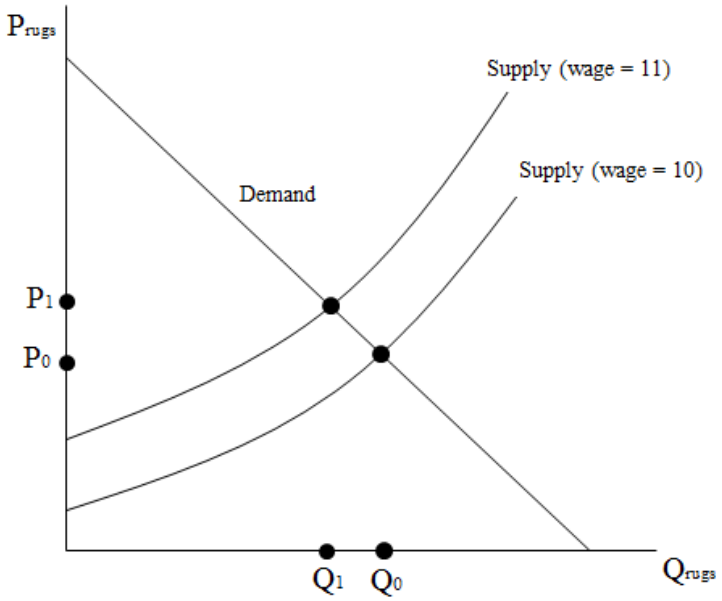
Now we can think about what happens when the wage rises. For our equation to remain an equation, either P must rise or MPL must rise. The rug price P is set by market supply and demand, so it won't change. Thus, MPL must rise. We have seen that MPL falls as L increases, so MPL must increase as L falls. Thus, the factory will hire less labor. When w rises, L will fall so that MPL rises, keeping the equation true.

We can go through the same thought process for the rug price, P. If P goes up, then to keep the equation in balance either w must rise or MPL must fall. Since w is determined by the market for labor, it doesn't change. Thus, the factory must make MPL fall, which it does by hiring more labor. When the price of output rises, the factory hires more workers.

It is common sense that employment falls after the wage rises, and that employment rises when the price of rugs rises, but this analysis gives some explanation for why happens. It also helps us understand what is going on when the market supply

curve shifts. In basic supply and demand analysis, an increase in the market wage shifts the supply curve to the left, as shown in Figure 11.1. The shift is the direct effect of the increase in w causing a decline in the derived demand for labor and thus reducing rug output for a given level of the rug price. The result of the supply shift, however, is to create an indirect effect. The price of rugs rises, which shifts out the derived demand for labor. In the end, less labor is used, but not as much less as if the rug price had not risen.

FIGURE 11.1
INCREASING THE WAGE SHIFTS UP THE RUG SUPPLY CURVE



Two goods are complements if when the price of good 1 rises, quantity demanded of good 2 falls. Capital and labor would be complements if when capital becomes more expensive, the quantity demanded of labor falls. That would be the case if capital and labor must be used in a fixed combination—say, in a ratio of one worker to one loom in weaving. More commonly, capital and labor are more moderate complements, because when the amount of capital rises the marginal product of workers rises too, even at the initial amount of labor.

In other situations, labor and capital are substitutes: when capital becomes more expensive, employers shift away from it and increase their demand for labor. Labor and capital would be substitutes if when labor became more expensive, the factory shifts to using more capital instead. Or, labor and capital could be independent goods: when the price of capital rises that has no effect on employment.

The derived demand curve is important for the political features of labor regulation. Workers will of course want higher wages, though not wages so high that they cut too drastically into the quantity of labor demanded. That is the same tradeoff the seller of any good faces. Workers will also, however, want higher prices for the goods their employers sell. Higher output prices increase the demand for labor, increasing both the wage and the quantity demanded. Labor unions are supportive of import tariffs that raise the prices of manufactured goods because they know that their employers will produce more at the higher prices, increasing the demand for their labor. In turn, this will change the equilibrium in the labor market and increase the equilibrium wage.

Workers like policies that reduce the cost of complementary inputs and increase the cost of substitute inputs. If materials are a complement and machinery is a substitute for labor, workers will favor subsidies for materials and taxes on machinery. Often the interests of different kinds of labor conflict with each other. A given job might take one skilled typesetter the same amount of time as two less-skilled typesetters, in which case the relative wages will determine which the employer uses.

All states have licensing requirements for work in certain occupations. Indiana for example, requires licenses for such occupations as acupuncturist, dentist, hearing aid dealer, nurse, accountant, home inspector, and plumber.[1] The public-interest justification of such requirements is that they keep quality high, helping the clients by overcoming the market failure of imperfect information. The requirements also, however, have the effect of discouraging competition from unlicensed workers who might have lower quality but would charge a lower price for their services. Let's use plumbers as an example. If we start from no regulation and impose a licensing requirement for plumbers, that will reduce supply, shifting the supply curve to the left because it is more costly to become a plumber. If the quality of plumbers rises, though, demand strengthens, shifting to the right, because customers are willing to pay more for a given amount of plumbing services. Whether surplus rises depends on which is stronger, the cost effect or the quality effect. If the market starts with no market failure, the cost effect will dominate. That is because customers would choose a plumber with a lower price even if his quality were lower. If the market has asymmetric information, however, then surplus could rise. As with product quality regulation in general, imposing a minimum quality standard would raise surplus, so long as the government chooses the standard correctly and does not impose higher quality than consumers really want.

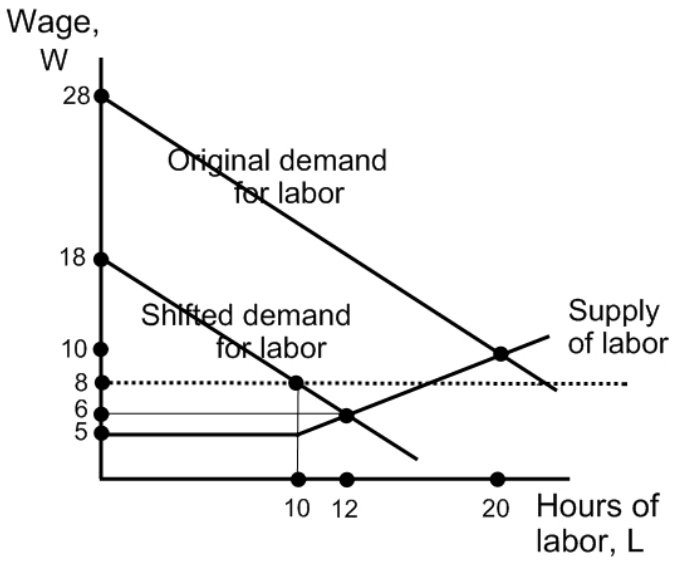
11.2: The Minimum Wage

One way to regulate labor is by direct regulation of its price. In 1938 the **Fair Labor Standards Act** (FLSA) established a federal minimum wage in the United States. Many states have set higher levels, which the act allows them to do. It is illegal

[1] "Professions," *In.gov*, State of Indiana, http://www.in.gov/pla/boards.htm.

to hire someone below the minimum wage, and while the employer will not go to jail, he will have to pay the employee back wages—even if the employee was complicit in being hired at a low wage— and fines of up to $1,100 per violation.[2]

FIGURE 11.2
A MINIMUM WAGE



For most kinds of labor, the minimum wage has little or no effect. If the minimum wage is set at $8.00 and the market-clearing wage is $10.00, as in Figure 11.2, then the minimum wage will not end up increasing labor costs at all, and the quantity of labor employed will be unaffected.

Let's set up supply and demand equations for Figure 11.2 to show the effect of a binding minimum wage. Let the derived demand for labor by employers be

$$L^d = 30 - w \tag{7}$$

and the supply by workers be

$$L^s(w) = \begin{cases} 0 & \text{if } w < 5 \\ 10 & \text{if } w = 5 \\ 10 + 2(w-5) & \text{if } w > 5 \end{cases} \tag{8}$$

[2]See "Employment Law Guide," U.S. Dept. of Labor, www.dol.gov/compliance/guide/minwage.htm.

To give you more practice with understanding supply, I've chosen an unusual labor supply curve to illustrate what happens when there is an alternative use of labor. The quantity of labor supplied is zero up to a threshold price, then jumps to 10 if the wage is \$5, and then rises linearly for higher wages. This represents a situation where many workers have an alternative use of their time that is better than a job in this labor market at a wage of \$5. The alternative might be self-employment, working in some other labor market, or living on the aid of government and relatives.

Equating quantity supplied and quantity demanded yields $30 - w = 10 + 2(w - 5)$ so $w = \$10$. Setting a minimum wage of \$8 would have no effect. The quantity of labor hired would equal 20 either with or without that minimum wage.

Since labor is a derived demand, it will shift back if the price of output falls. Recessions are the biggest cause of reduction in the demand for labor. Aggregate demand falls, and so the prices of goods fall, which in turn causes the demand for labor to shift back. Suppose there is a recession and the derived demand for labor becomes

$$L^d = 18 - w \tag{9}$$

Equating the quantity supplied of labor to the quantity demanded yields $18 - w = 10 + 2(w - 5)$ which solves to $w = \$6$. A minimum wage of \$8 is now binding.

At the equilibrium wage of \$6 the quantity demanded of labor would be $L^d(w) = 18 - w = 12$, which would equal the quantity supplied. To find consumer surplus—which in this case means surplus to the buyers of labor, the firms—we first need the wage at which derived demand falls to zero. Derived demand falling to zero means $L^d(w) = 0 = 18 - w$, which implies $w = \$18$. Thus, the employer surplus at a wage of \$6 would equal $.5(18 - 6)(12) = 72$. This surplus would compensate employers for the fixed costs they had paid for their capital.

The producer surplus—which in this case goes to the workers, the suppliers of labor—would equal the rectangle of size (10)(6-5)=10 for their first 10 units supplied plus the triangle of size .5(2)(6-5)=1 for the last unit, which add up to a worker surplus of 11.

Total surplus would be 83, the employer surplus of 72 plus the worker surplus of 11.

Under the minimum wage of \$8, quantity supplied would exceed quantity demanded. Quantity supplied would be $10 + 2(w - 5) = 16$, but quantity demanded would be $18 - 8 = 10$. The smaller of these two labor quantities would be the amount of labor actually hired, so $L = 10$. Employer surplus at this level of hiring would be .5 (18-8) (10) = 50.

To find the worker surplus, we need to know what wage would elicit a quantity supplied of 10 units of labor. That wage is \$5 in this case, but the workers are paid \$8. Thus, worker surplus has risen to equal the rectangle of size (8-5)(10) = 30. Adding 50 in employer surplus to 30 in worker surplus yields a total surplus of 80.

Thus, we reach the typical result that a price floor—in this case, a minimum wage—creates deadweight loss by reducing the amount of trade.

The minimum wage has led to a drastic increase in the surplus of the workers. This provides political and policy motivation for the minimum wage. As a group, minimum-wage workers are better off. Like a group of firms, they would like to cartelize and raise the price, and here the government is doing that for them, making it illegal to pay less than the cartel price. Like firms in a cartel, however, workers as a group would not want the minimum wage set too high. Once the wage is too high, a further rise in the minimum wage reduces surplus because it cuts too far into employment. The ideal wage for workers would be found by setting worker marginal revenue equal to worker marginal cost. For workers, the marginal cost is the height of their supply curve, which for small quantities is flat at \$5. The workers' marginal revenue is how the total amount of pay changes with the amount of labor. It is found from the employers' demand curve in the usual way, except the quantity is of labor and the price is the wage.

$$MR = \frac{dR}{dL} = \frac{d}{dL} wL = \frac{d}{dL}(18 - L)L = 18 - 2L \tag{10}$$

Equating MR and MC yields $18 - 2L = 5$, which solves to $L = 6.5$. That quantity of labor will be demanded by employers only if $w = \$11.50$, so our minimum wage of \$8.00 is well below what maximizes worker surplus.

Who else would want the minimum wage? Labor unions support higher minimum wages, even though their members already earn well above the minimum wage. Cynics suggest that this might be because a higher minimum wage reduces the competitiveness of unskilled and skilled labor, which are substitutes. There is a public-interest argument that motivates most supporters, though: minimum-wage workers earn much less than the average worker in the economy, and one might think they deserve more surplus than the market gives them. Though minimum-wage workers on average have higher surplus after imposition of a minimum wage, however, the amount of employment of unskilled labor has declined, so some workers end up unemployed and lose what surplus they would have had at the equilibrium wage. Which workers are these? Most likely, the ones newest to the labor market are the ones who would lose. If a minimum wage is imposed, its most drastic effect will be on hiring of new workers rather than on firing old workers. One concern is that the minimum wage will make it less likely that young people acquire work experience. Some countries have **subminimum wages** for young people. Ireland, for example, has a normal minimum wage equal to \$11.94, but workers under 18 can be paid just 70% of that and the minimum wages in the first and second year of employment after age 18 are at 80% and 90% to give employers incentive to hire workers new to the labor force.[3] The idea of a subminimum

[3] "Minimum rates of pay," National Employment Rights Authority, Ireland (July 25, 2011).

wage is to encourage the hiring of young people who are less valuable to the employer because of their lack of experience. In addition, teenagers are most likely to be living with their parents, and their family income might be well above the poverty line, so the charitable motive for the minimum wage is weaker.

The minimum wage also affects the surplus of employers and consumers. After a minimum wage is imposed, the higher wage will be passed on to consumers through higher prices for the goods produced by those workers. In the short run, the burden will shared between consumers and employers, but in the long run more or all of it will shift to consumers.

A little discussion will be useful on this last point. Suppose the market for fast food is perfectly competitive and all firms have the same cost curves. In the short run, the market supply curve for fast food will be upward sloping, and the restaurants will absorb some of the increase in costs once the minimum wage is imposed. In the long run, however, some establishments will close down because they can't cover their fixed costs. Since all firms have the same cost curves, the long-run supply curve will be perfectly elastic and producer surplus will be zero. Firms will be earning zero economic profit because they will just be earning back their cost of capital, and we have assumed none of them has a cost advantage from which it could earn a special return. Thus, in the long run if the minimum wage goes up, the increase in costs will be fully reflected in the higher price of fast food to consumers.

In the short run, which is most important for politics, more of the burden of a costly regulation will be on the firm and less on the consumer. Thus, even if the long run cost is entirely paid by consumers, political opposition to the regulation will come mostly from business. The loss to businesses is also more concentrated, and they have trade associations to lobby for them. Consumers may not realize that in the long run exit of businesses will shift more of the burden to them. Rationally ignorant, they may not hear of the proposed increase, may not care enough to take action, and may not even understand that it would raise restaurant prices at all.

11.3: Employment Mandates

Many regulations can be viewed as unfunded employer mandates, which require the employer to provide something desirable to the worker—fringe benefits, particular contract terms, or better working conditions. These could include minimum vacations, severance pay, health insurance benefits, family leave, a grievance process before firings, or ventilator masks to prevent occupational diseases. The government rarely offers to pay for the mandates, which is one reason mandates are politically attractive. A crucial feature is that unless the government simultaneously bans wage cuts, the employers are still free to set wages at any level the workers will accept. What the worker gains from the mandate he may lose from a resulting pay cut.[4]

[4]The gains and losses also vary among different kinds of workers. See "The Incidence of Mandated

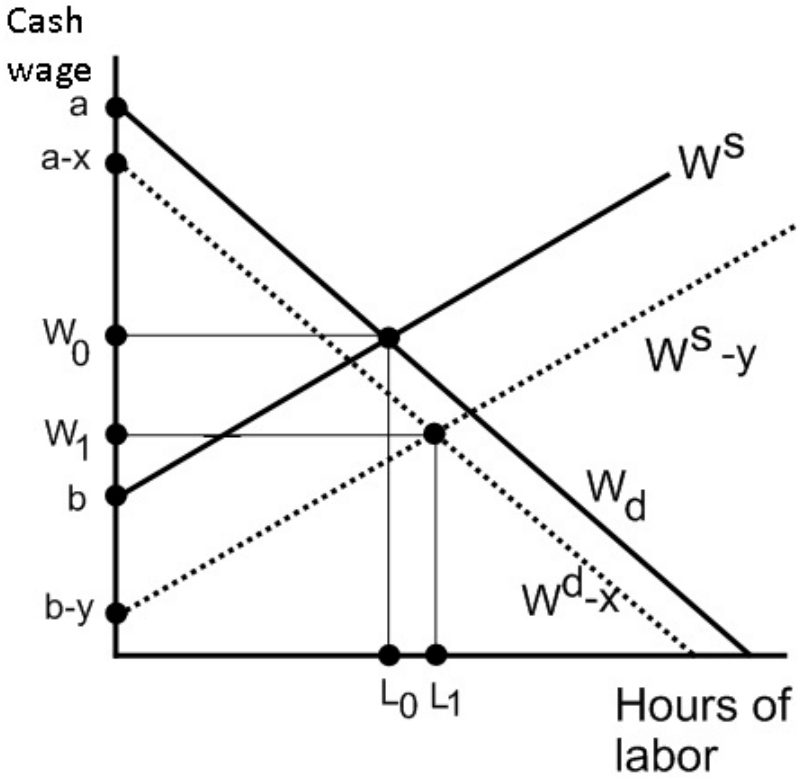
To see this, let us start by looking at a voluntary fringe benefit. Suppose employers are now paying just cash but are considering adding health insurance as a fringe benefit. Figure 11.3 shows supply and demand for labor, with the equilibrium at W_0 and L_0. The new health insurance will affect both labor supply and labor demand. The effect on labor demand is that the employer must now pay amount x extra per worker on health insurance. The worker's usefulness to the employer does not change, so if the employer was willing to pay $W^d(L)$ in cash wages for L workers before, he is now willing to pay $W^d(L) - x$ in cash wages. The employer ends up paying out the same amount, whether it is all cash to the worker or partly cash to the worker and partly cash to buy an insurance policy. The demand curve for labor will shift down by amount x.

Next consider the worker's side, labor supply. Before, workers required $W^s(L)$ in cash wages to supply L in work hours. Now, the job has the extra benefit of health insurance, so they are willing to work for less cash. Let the value of the health insurance be y per worker. A worker who would work for W^s before is now willing to work for a lower cash wage, $W^s - y$. Hence, the entire supply curve shifts down, from $W^s(L)$ to $W^s(L) - y$.

The new equilibrium is where $W^d(L) - x$ and $W^s(L) - y$ intersect. If $x < y$, then the new equilibrium will be at a lower wage and a greater quantity. To see that the quantity rises, first realize what would happen if $x = y$. Then both curves would shift down the same amount, so both of them would pass through the point $(L_0, W_0 - x)$. If $y > x$, however, the $W^s - y$ curve has shifted down more than the $W^d - x$ curve, so the new intersection will be at a lower point on the $W^d - x$ curve than if $x = y$. Since the point is lower on the demand curve, L has increased.

Maternity Benefits," Jonathan Gruber, *The American Economic Review*, 84: 622-641 (June 1994).

FIGURE 11.3
ADDING AN EFFICIENT FRINGE BENEFIT



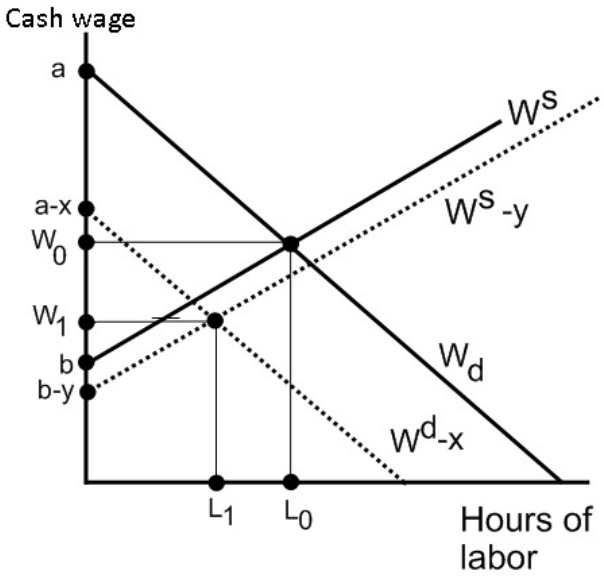
Both employers and workers will be better off as a result of the change. Start with the employers. Their cost of labor has risen by x per unit, which hurts them. The wage has fallen by more than x, however, so their cost per unit of labor has fallen overall. The amount of labor that they employ has risen, from L_0 to L_1. Thus, both the height and the breadth of the employe surplus triangle have increased, and they are better off.

How about the workers? As with employer surplus, $L_1 > L_0$, so we just need to show that the new triangle has a greater height, i.e. that $W_1 + y > W_0$. That inequality is equivalent to $W_0 - y < W_1$, which in words says the wage has dropped by a smaller amount than y. To see that it has, note that if L had not changed at the new intersection, the wage would have dropped by exactly y. But L has increased, so the equilibrium is further up the supply curve, and adding y to the new equilibrium wage would attain a point on the old supply higher than W_0. Thus, the worker surplus triangle also has increased its width and height, and workers are better off in the new

equilibrium. The new fringe benefit helps everyone.

We assumed that the fringe benefit cost the employer less than it benefited the worker. This assumption that $x < y$ was crucial to the conclusion that the health insurance was helpful. To see that, look at Figure 11.4. Here, the health insurance costs the employers more than its value to the workers ($x > y$). As a result, the employer labor demand curve shifts in more than the worker labor supply curve shifts out. The result is that the new equilibrium has a lower level of hiring: $L_1 < L_0$. This clearly diminishes the width of the surplus triangles, and the height diminishes too, by the kind of reasoning we used earlier for the $x > y$ case.

FIGURE 11.4
AN INEFFICIENT FRINGE BENEFIT



What sort of things determine which is bigger, the cost x to the employers of providing health insurance or the benefit y to the workers? Three things are most important. First, can the employer buy or otherwise provide health insurance more cheaply than the worker? Second, does the worker desire strongly enough to buy health insurance instead of the other goods he could pay for with cash wages? Third, can the employer and worker manage to reduce the total amount both of them pay in taxes to the government if the employer pays instead of the worker?

In the case of health insurance, for most people the answers to these three questions support the conclusion that $x < y$. Employers can take advantage of economies of scale and their greater sophistication to shop around for health insurance for their employees and buy it more cheaply than the employees could. In addition, if the employer

is large it may have market power and be able to bargain with the insurance company for a better price. Even more important, employer-provided health insurance avoids adverse selection. **Adverse selection** is the problem that it is the people who know they are unhealthy who try to buy the most extensive health insurance. Knowing this, when insurance companies see an individual customer approaching them to buy, they set the price higher than when it is a plan for an entire company. They know that since all employees of the company are getting the same insurance coverage, the insurance company is getting more of a random sample rather than just the unhealthiest people as customers. This does mean there is something of a difficulty with the second question for whether $x < y$—whether the workers prefer health insurance to higher cash wages. A worker who is young and healthy might not want to buy health insurance or have his employer provide it with a reduced wage. But the health insurance can at least be a good deal for the average worker.

Health insurance also has an important tax benefit: the company employing the worker can deduct the health insurance premiums as an expense, reducing its income tax. The worker, however, does not need to count the premiums as income.

Let's look at a hypothetical in which the worker is currently using \$10,000 of his salary to pay for health insurance. The worker must pay income tax on this before he can use what is left over to buy health insurance. If the worker's tax rate is 20%, he is left with \$8,000. Though the company pays out \$10,000, the worker is left with only \$8,000 in health insurance.

The company could reduce the worker's wage by \$8,500 (to imagine one possible scheme), buy the same \$8,000 of health insurance the worker would have bought, and both would be better off. The company has saved \$500, because instead of the former \$10,000 in cash it paid the worker it is now paying just \$1,500 in cash plus \$8,000 worth of health insurance. The worker still ends up with the health insurance, plus he still has \$1,500 of the \$10,000 in cash income he used to receive. He has to pay the 20% tax on that cash income, but he has \$1,200 left over that he can use to buy other things.

It might seem that to attain value maximization the government should calculate whether $x > y$ or $y > x$ and then require health insurance or not depending on the result. That neglects the role of profit maximization. Companies will offer health insurance voluntarily under the very conditions the government would be trying to calculate. As we have seen, if $y > x$, so the benefit to the worker is greater than the cost to the employer, it will be to their mutual benefit to reduce the cash wage in exchange for health insurance. You could think of it as two separate transactions: first the employer hiring the worker and second agreeing to sell him health insurance. If the cost to the employer is less than the benefit to the worker there are gains from trade available and we expect the trade to take place at some price. If there were just one worker and one employer, it would be a bargaining problem, where they might

arrive at a price halfway between x and y that would split the gains equally, or, if their bargaining abilities were different, some other price that would split the gains unequally. If there is a perfectly competitive market for labor, then we have seen in the graphs what the result will be—a splitting of the gain, where the amount of the split depends on the elasticities of supply and demand. Even if there were just one employer, he would offer the efficient fringe benefit, since that would help him to reduce his expenditure on labor. If he offers the fringe benefit, he can offer y less in cash wage, and if $x < y$ that will be profitable for him.

In actuality, some firms offer health insurance and some do not. Why? Presumably some don't because x is not always less than y. In particular, even if health insurance is tax advantaged, some workers will prefer cash. A worker is married to someone with family health insurance already, or his income might be low enough that he wants the cash for immediate expenses and is willing to accept the risk of illness. We see tremendous variation in fringe benefits and working conditions between companies because of variation in worker preferences. Some people prefer high pay but long hours; others are willing to forgo high pay in exchange for a more relaxed workplace. Leaving such things to the marketplace lets different preferences be satisfied.

Mandatory employer-provided health insurance is required by state law in Massachusetts—Romneycare, as it is often called after the governor who passed it. In 2010 it also became federal law, with the **Affordable Health Care Act** (Obamacare). Firms that employ over 50 workers are required to provide health insurance plans that cost less than 9.5% of the employee's income. If the firm does not provide insurance, it is fined and the worker may buy government-subsidized insurance from an outside company.

Most companies offered health insurance benefits already even before the ACA: 69% of employers with three or more workers, 90% of those with 25-49, 95% of those with over 50, and 99% of those with over 200.[5] Why impose a mandate to make them do what they were doing already? Partly it is to force the minority that do not offer benefits now to offer them. Another reasons, though, is that for lower-income workers another feature of the act, government-subsidized outside plans, would make the worker's benefit y from employer-provided insurance decline. The subsidy makes the outside plan cheaper for employees so their value for the fringe benefit declines, and if y declines below x then employees and employers will shift to less insurance and greater cash wage. When the employees shift to the government-subsidized plan, however, that raises government expenditure, which the act is trying to avoid.

Employer mandates can create another unexpected distortion if they create a fixed cost per worker: substitution between full-time and part-time workers. The ACA requires employers with over 50 employees to provide health insurance for any worker

[5]"Employer Health Benefits: 2008 Summary of Findings," Kaiser Family Foundation, p.4, http://ehbs.kff.org/images/abstract/7791.pdf.

who works more than 30 hours per week, and it seems that employers have cut back on the hours of part-time employees who were working more than that number of hours.

11.4: Market Failure and Workplace Safety

What we have worked through is the idea that if some feature of employment such as the fringe benefit of health insurance benefits the worker more than it costs the employer, that feature will be voluntarily adopted, to the benefit of both parties. The principle can be applied to many aspects of pay and the workplace. Employers grant vacation time without a government mandate, though some companies offer less than others. Employers install air conditioning partly to make their workers more productive but also because they know they would have to pay extra wages if working conditions were worse. Some employers provide pension plans and some do not, based on whether they think their workers would prefer their compensation as pensions or as immediate cash. It is not clear why the government needs to impose mandates for any of these things.

Where, then, might regulation be justified? We must look for possible market failure. Market power is not likely to be important, since even monopoly employers have incentive to give their workers good working conditions and efficient fringe benefits—though only because the monopoly can then reduce wages accordingly. Externalities could possibly matter. One argument for mandatory health insurance is that if a worker does not have health insurance he will take advantage of free medical care under government programs or charity. Requiring him to take part of his pay in health insurance means he will be less of a burden to the government.

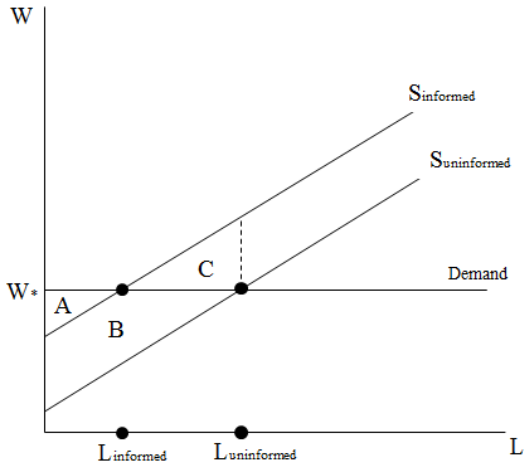
Most often, however, it is not market power or externalities that are used to justify labor regulation, but asymmetric information and paternalism. Suppose, for example, that the employer- provided benefit in something hard to value— equipment that causes fewer workplace accidents, or low levels of exposure to chemicals. These are like health insurance because they are costly to the firm but helpful to the workers. If the firm pays an amount equal to x per worker, it confers an advantage of y per worker, with $x < y$. If the worker does not realize what the firm has done, and the firm cannot persuade the workers of the safety feature's value, the firm will not be able to reduce the cash wage enough to make adding the safety feature profitable. In that case, value would be created if the government required firms to install those features.

For consumer products, the main problem created by asymmetric information is buyers who cannot accurately tell the seller's quality. For labor, that problem is still important. Employers cannot tell individual workers' talent or honesty in advance, so workers get misallocated to jobs not appropriate to their talents.

For labor, however, there is also a problem of the seller (the worker) not knowing his true cost of working for the buyer (the employer). In the 1910's and 20's, the U.S. Radium Corporation employed women to paint a mixture of glue and radium onto the

dials of watches, clocks, and various instruments of measurement so that they would glow in the dark. Radium is not only highly carcinogenic but can cause death by radiation poisoning. The managers knew something of the dangers, though not as much as we know today, since radium paint was used on a large scale during World War I without drastic consequences. Company scientists used lead shields and handled the radium powder with tongs, but the workers knew nothing of the risk. They didn't worry about getting paint on their skin, they painted their nails with radium for fun, and the company even instructed them to lick their brushes to shape the points. After four suspicious deaths, the Consumer's League, a nonprofit organization that devoted itself to reporting on child labor and workplace hazards investigated. In 1924 it published a report on the danger of work in the industry. Some of the women brought lawsuits, which received national attention (though they settled out of court). The factory's dangerousness was particularly reprehensible because the radiation poisoning, if not the cancer danger, could have been prevented by even a small amount of shielding. Even gloves can block alpha rays, which are potent but easy to stop, though the carcinogenic gamma rays are not.[6]

FIGURE 11.5
UNPERCEIVED DANGER IN THE WORKPLACE—PERFECTLY ELASTIC DEMAND



To analyze asymmetric information, we'll start with Figure 11.5, which shows an industry in which demand for labor by employers is perfectly elastic, pinning down the wage at w^*. Workers do not realize the dangers of radium in the workplace and their labor supply is given by the outer supply curve, $S_{informed}$. If they knew the truth about

[6]Kovarik, Bill , *The Radium Girls*, originally published as Ch. 8 of *Mass Media & Environmental Conflict* with Neuzil, Mark, Sage Publications (1996), http://www.radford.edu/~wkovarik/envhist/radium.html.

the dangers of the workplace, they would insist on higher wages and the supply curve would be $S_{informed}$. The two curves $S_{uninformed}$ and $S_{informed}$ are like the demand curve and the value curve. The curve $S_{informed}$, the informed labor supply curve, represents the true cost to the workers of taking this job. Since workers use the uninformed supply curve in deciding how much to work, the equilibrium will be at $L_{uninformed}$ and w^*.

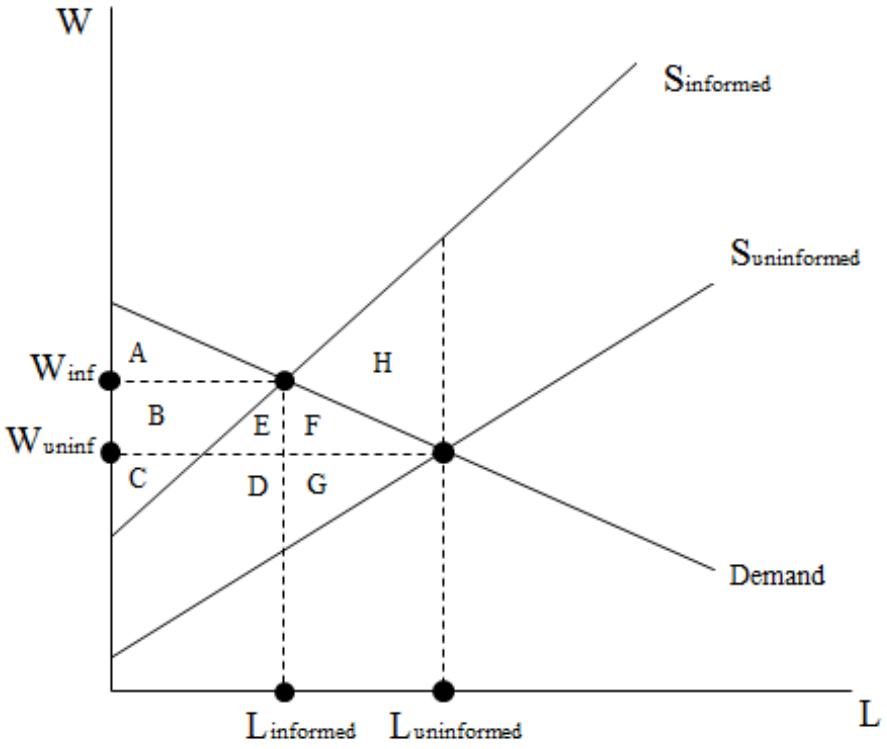
The employer surplus in equilibrium is zero because demand is perfectly elastic, so there is no area above the price and below the demand curve. The worker surplus is A-C, which is actually negative. The workers think they are earning surplus A+B, but if we look at their true costs of choosing this job, as shown by the informed supply curve, the wage is less than the cost for workers on the supply curve beyond quantity L_{inf}. Only too late do workers realize that their wage does not justify the risk.

Figure 11.6 goes through the same analytic process, but with the demand curve sloping downwards so there will be positive employer surplus. Again, the equilibrium wage and employment is where the employer demand curve intersects the uninformed worker supply curve: ($S_{uninformed}$, W_{un}). Employer surplus is A+B+E+F, which is the amount employers would have been willing to pay over the equilibrium wage they do pay. Worker surplus is C-E-F-H. Only area C is below the wage and above the supply curve. Areas E+F+H are subtractions for quantities where the worker's true cost is above the wage W_{un}; it is the area above the wage and below the supply curve. Adding employer and worker surplus, we get A+B+C-H as total surplus.

Workers believe they are getting surplus of C+D+G. They indeed are earning areas D+G as part of their total take-home pay but those areas are not surplus, because they only give partial compensation for true the costs of those workers between $S_{informed}$ and $S_{uninformed}$.

If the workers became informed, they would supply only $S_{informed}$ and the wage would rise to W_{inf}. Both of these changes would cut into employer surplus, which would only equal A. Worker surplus is B+C. Total surplus is A+B+C, so the area H is the deadweight loss from excess provision of labor under asymmetric information.

FIGURE 11.6
UNPERCEIVED DANGER IN THE WORKPLACE—MODERATELY ELASTIC DEMAND



Merely requiring the release of safety information is the obvious regulation to solve the market imperfection here. This is easier said than done, however. If employers knows the risks better than the government, the regulator must incur costs to monitor and discover which employers are being truthful. Moreover, even if the information is given to them, workers must be able to understand it. The question then becomes whether the government is willing to override the worker's decision that he is willing to accept the danger. The worker may rationally want to leave the decision as to whether a safety measure is efficient in the government's hands, since he knows less and even if he did know it would be hard as an individual to see if the company was in compliance.

The old way to deal with workplace safety was the tort system, as happened in the radium cases of the 1920's. Just as in the case of unsafe consumer products, the worker whose health was hurt could sue his employer. In the workplace, however, strict liability would impose too much of the cost of good health on the employer and too little on the worker. When a worker spends much of his life in a particular job, the influence of workplace on health is hard to untangle with the influence of home life. Workplace

accidents are easy to connect with work but they can be caused by worker carelessness as well as by employer negligence. For that reason, accidents are covered by **workers' compensation** plans (also known as **workman's compensation**). This is a form of mandatory insurance. The details differ from state to state and there is also a plan for federal workers, but the idea in all of them is that employers must pay premiums into a fund that compensates workers for both the health cost of the accident and the wages they will lose because of the disability. The compensation is not flexible and individualized, as in the tort system; it uses a fixed schedule for payments, as shown in box 11.1. The purpose of establishing the workman's compensation system was to replace the tort system with a cheaper and quicker method of compensating workers, so generally a worker is not allowed to sue his employer in tort after a workplace injury.[7]

Protection against risks underestimated by workers is the justification for the **Occupational Safety and Health Administration (OSHA)**, created in 1970. Initially, OSHA used **design-based standards** that would specify the exact design of equipment—the width of ladder steps for example. OSHA later shifted more to **performance-based standards** which specifies a minimum level of performance or safety. Under a performance-based standard, a ladder might be required to be able to bear a certain weight without breaking. The problem with design-based standards is that while they give clear direction to employers, they are too rigid. Safety is the objective, not a particular design. The design OSHA chooses might well be less safe or more costly than some other design that currently exists in the marketplace or that might be developed. In addition, design-based standards stifle innovation, since any new product would have to be incorporated into the standard before it could be used.

OSHA has also changed its attitude towards cost-benefit analysis. OSHA's authorizing statute tells it to protect worker health and safety whenever feasible and affordable. This was usually interpreted as meaning that the regulation would not put the firm out of business, rather than that the benefits would exceed the costs. Marginal analysis was not used to develop standard to where the marginal cost of a stricter standard started to exceed the marginal benefit of extra safety. This policy was challenged in court, but the Supreme Court ruled in *American Textile Manufacturers Institute, Inc. v. Donovan*, 452 U.S. 490 (1981), that OSHA was not required to balance costs against benefits. The Supreme Court did say that while OSHA was not required to trade off costs and benefits, it was at least permitted to do so. President Reagan issued Executive Order 12291 in 1981 to tell OSHA to do that, and it has been part of general executive policy since then.

[7] A separate source of support for people who have worked for a long enough time and become disabled for some reason is Social Security Disability Benefits. The number of people receiving these has greatly expanded in recent years. See David Autor "The Unsustainable Rise of the Disability Rolls in the United States: Causes, Consequences, and Policy Options," (2012).

BOX 11.1
COMPENSATION SCHEDULE, U.S. CODE, §8107(C), CHAPTER 81 OF TITLE 50 (in weeks of wages)

(1) Arm lost, 312 weeks
(2) Leg lost, 288 weeks
(3) Hand lost, 244 weeks
(4) Foot lost, 205 weeks
(5) Eye lost, 160 weeks
(6) Thumb lost, 75 weeks
(7) First finger lost, 46 weeks
(8) Great toe lost, 38 weeks
(9) Second finger lost, 30 weeks
(10) Third finger lost, 25 weeks
(11) Toe other than great toe lost, 16 weeks
(12) Fourth finger lost, 15 weeks
(13A) complete loss of hearing of one ear, 52 weeks
(13B) complete loss of hearing of both ears, 200 weeks
(15) Compensation for loss of more than one phalanx of a digit is the same as for loss of the entire digit. Compensation for loss of the first phalanx is one-half of the compensation for loss of the entire digit.
(17) Compensation for loss of use of two or more digits, or one or more phalanges of each of two or more digits, of a hand or foot, is proportioned to the loss of use of the hand or foot occasioned thereby.

One reason OSHA started by emphasizing design is that it is easier to monitor than performance. OSHA's budget is $558 million, but that can only pay for 2,200 inspectors. Since there are more than 8 million workplaces and 130 million workers around the nation, this means there is 1 inspector for every 59,000 workers. OSHA did 41,000 inspections in 2010. States may choose to enforce OSHA regulations using state agencies instead, with OSHA funding and oversight and 24 states have chosen to do so. In 2010 there were 57,000 inspections by state government agencies.[8] That helps, but with so many workplaces, the main impact of OSHA may be in setting safety standards which workers can look at to assess their employers' performance and use to complain to OSHA if they see noncompliance.

[8]"Commonly Used Statistics," OSHA, http://osha.gov/oshstats/commonstats.html.

11.5: Unions

Many workers organize into unions, joint associations for bargaining with employers over wages, fringe benefits, and working conditions. Unions are regulated by the **National Labor Relations Board**, created in 1935 by the **National Labor Relations Act** (or **Wagner Act** after the senator who sponsored it). The purpose of this act was to make it easier for workers to organize and sustain unions. Its central feature is that if a majority of workers at an establishment vote to be represented by a union then the management must **bargain in good faith** with the union about a list of subjects that includes wages, hours, vacation time, insurance, and safety practices. Bargaining in good faith is very difficult to define. The employer does not have to grant any concessions to the union, but he must actively meet with it and show signs that he is open to agreement if the parties can come up with some new set of terms for the contract. If one party thinks the other is not bargaining in good faith, he can go to the National Labor Relations Board and file a complaint. The NLRB will issue a ruling which can be appealed to a federal court. An example is the case of *Radisson Plaza Minneapolis v. NLRB*, 987 F.2d 1376 (8th Cir. 1993), where the court found that Radisson had not bargained in good faith because it unilaterally changed wage and benefit schedules, cancelled meetings with the union, cut other meetings short, engaged in discussion on irrelevant matters that wasted time, and made obviously unacceptable proposals. Other cases have found bargaining in bad faith when the employer's representative was unprepared, when the employer made a take-it-or-leave-it offer, when the employer would only agree to two meetings per month, and where the employer pleaded inability to pay but would not back the claim up with facts.[9]

If the employer and the union do not come to an agreement, the employer can declare an **impasse** and implement the last offer made to the union. The union can then go on strike, refusing to work until agreement can be reached on a new contract. This is risky for the workers, because under the **Mackay Doctrine**, the employer may hire permanent replacements for the striking workers.[10] Although the Wagner Act forbids an employer from firing a worker because he goes on strike, it only requires the employer to give preference in case of vacancy to workers replaced during a strike. Thus, if the employer can find replacements, the worker may well not get his job back even if the strike does end.

Much of what the NLRB does is to rule on cases of **unfair labor practices**. Examples are:[11]

[9] See Keith N. Hylton, "An Economic Theory of the Duty to Bargain," *Georgetown Law Journal*, 83: 19–78 (1994-1995), especially footnote 16.

[10] *NLRB v. Mackay Radio & Telegraph Co.*, 304 U.S. 333 (1938). Thomas C. Kohler & Julius G. Getman "The Story of NLRB v. Mackay Radio & Telegraph Co.: The High Cost of Solidarity," in *Labor Law Stories*, Laura J. Cooper and Catherine L. Fisk, eds., Foundation Press, 2005.

[11] http://www.nlrb.gov/rights-we-protect/employerunion-rights-obligations.

- Threatening employees with loss of jobs or benefits if they join a union.
- Threatening to close the plant if the employees vote to unionize.
- Transferring, laying off, firing, or assigning more difficult work tasks to employees active in the union.

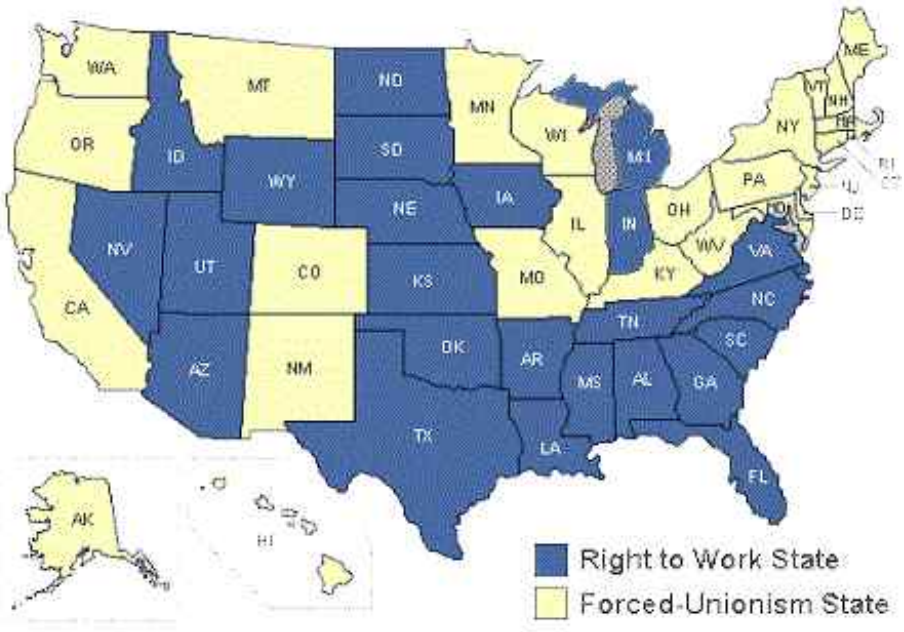
Actions of employees can also be unfair labor practices:

- Picket line misconduct during strikes, such as threatening, assaulting, or barring non-strikers who want to enter the establishment.
- Striking over issues unrelated to employment.
- Refusing to process the grievance complaints of a worker because he disagrees with union officials.

The other major bill that regulates unions besides the Wagner Act is the **Taft-Hartley Act** of 1947. This was passed by a more conservative Congress than the Wagner Act and was meant to roll back the power of unions. It added new unfair labor practices such as unions organizing boycotts by the public of the employer's product. These are **secondary boycotts**, thus called because it is not a boycott by the immediate union involved but by other people or unions whom they recruit to help. The act's most important provision, however, was that it outlawed the **closed shop**: a labor contract in which the employer agrees to hire nobody but existing members of the union. Moreover, it allowed state-by-state decisions on whether to allow contracts which required any workers hired by a unionized employer to either join the union or pay union dues while remaining a non-member. State laws forbidding this kind of contract are known as **right-to-work** laws.

Right-to-work laws make it harder for unions to organize and succeed. A problem for a union, like for a cartel, is to prevent free-riding. The ideal for a worker is to work in a unionized firm with high wages but to remain out of the union so as to avoid paying union dues or having to go on strike. Contracts requiring non-members to pay union dues anyway help solve this problem. Right-to- work laws require firms to be **open shop**, not requiring non-members to pay union dues. This reduces the funding base of the union. Figure 11.7 shows which states have such laws (note that it was drawn before Indiana passed a right-to-work law in 2012).

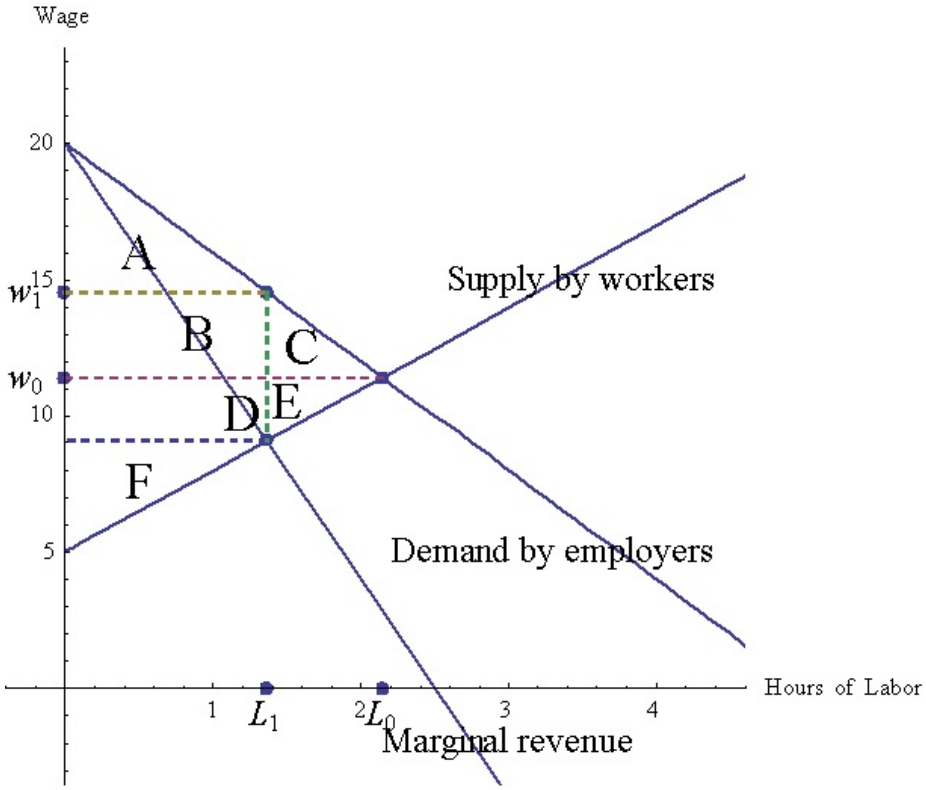
FIGURE 11.7
RIGHT-TO-WORK STATES



The controversy over unions is whether they simply raise the wages of some workers or contribute to productivity by improving company operations and by enforcing labor contracts. The Clayton Act of 1914 exempts labor organizations from the antitrust laws and permits groups of workers to jointly bargain with employers. Thus, as in Figure 11.**??**, perfectly competitive workers who initially earned w_0 as the result of supply and demand could organize into a union that would raise the wage to w_1. This would reduce hours employed from L_0 to L_1, since the employer would not demand so many hours of labor at the higher wage, but it would raise the worker's producer surplus from F+D+E to F+D+B. The employer surplus would fall from A+B+C to just A, and area C+E would be deadweight loss, the usual loss triangle from the exercise of market power.

In choosing w_1, the union would use the same procedure as a monopoly of a consumer product. It would determine the employers' marginal revenue curve and find the quantity where MR=MC. In this case, the supply curve is used for the marginal cost curve, since it represents the workers' opportunity cost of working extra hours.

FIGURE 11.8
A UNION USING MARKET POWER



Special-interest problems also arise. Unions routinely bargain over the contract's procedures for dealing with workers who do poor work. The workers most likely to care about those procedures are those who think they might do poor work, and they will lobby for procedures to make discipline more burdensome for the employer even if the union must offer wage concessions in return for concessions on procedures.[12]

Labor unions have diminished in importance in the United States since 1960 and they cover very different industries than they used to.[13] In 1985, 20.5% of workers were covered by union agreements, of which 12.4 million were in the private sector and 6.9 million were in the public sector. By 2010 the figure had fallen to 13.1%, of which 7.9 million were in the private sector and 8.4 million were in the public sector. Only 7.7% of private-sector employees are covered by unions, but 40.0% of public-sector

[12]A good survey of estimates of the effect of unions on productivity is Barry Hirsch, "What Do Unions Do for Economic Performance?" *Journal of Labor Research,* 25: 415–455 (Summer 2004).

[13]A convenient reference is: Alejandro Reuss, "What's Behind Union Decline in the United States?" *EconoFAQs* (March 31, 2011) http://www.dollarsandsense.org/archives/2011/0311reuss.html.

employees are.[14]

One explanation for the decline of unionization is that employment in basic industries such as manufacturing and mining has diminished over time in the United States whereas employment in services and government has risen. Unionization played a part in that decline, since it made products in unionized industries relatively more expensive and hence less attractive to consumers. Increasing international trade also played a part. This is partly because foreign labor would be cheaper even in the absence of unions in America, but unions increased the labor cost disadvantage of domestic production even more. Not only has manufacturing employment shrunk, but the percentage of U.S. manufacturing that is unionized has shrunk, which is perhaps a sign that union productivity gains are not big enough for unionized firms to be able to compete well against non-unionized firms.

On the other hand, public-sector unions face much lower competitive pressures. If unionization raises the cost of the Social Security Administration, it will not lose business to a competing agency. Competitive pressure is not entirely absent, to be sure. Teaching in public schools is heavily unionized, but parents may resort to non-unionized private schools if union-negotiated procedures make it too difficult to remove bad teachers. When enrollment in the public schools declines, so do state education budgets. Public-sector unions, however, are in a powerful position because their employer, the government, has a big advantage over private competitors, including being able to ban them from competition. Public-sector unions are regulated differently, which does restrain their power. They often do not have the right to strike; policemen may not go on strike, nor may federal workers.[15] Even unions that may strike, such as teachers' unions, rarely do. Rather, much of their purpose is political lobbying. Public-sector unions are highly influential in state politics, as sources of votes, information, campaign workers, and contributions made by their political action committees. Of the top 20 political action committees for federal contributions, 5 were unions, almost as many as the 7 corporations.[16] Thus, the role of unions in America today is very different from in the past.[17]

11.6: Concluding Remarks

[14] "Table 664. Labor Union Membership by Sector: 1985 to 2010," *The Statistical Abstract of the United States 2012*.

[15] 5 United States Code 7311, http://www.law.cornell.edu/uscode/5/7311.html.

[16] The 5 unions were those for electrical workers, teamsters, machinists, sheet metal workers, and air controllers, *Opensecrets.org*, "Top 20 PAC Contributors to Candidates, 2011-2012," http://www.opensecrets.org/pacs/toppacs.php?cycle=2012&party=A.

[17] Unionization has also been in decline in the United Kingdom, Germany, and Italy. See John T. Addison, Alex Bryson, Paulino Teixeira, and Andr. Pahnke, "Slip Sliding Away: Further Union Decline in Germany and Britain," IZA discussion paper, Bonn (February 2010).

This chapter has left many aspects of labor regulation untouched. I have not discussed the requirements that employers collect Social Security and Medicare taxes, unemployment insurance, workmen's compensation, discrimination law, sexual harassment law, and the Americans with Disabilities Act. I chose an assortment of the most important regulations, with a special eye to the idea of unfunded mandates.

Review Questions

1. How do changes in the price of output and the price of other inputs affects a firm's demand for labor?
2. How does the minimum wage affect labor markets?
3. How do government-mandated fringe benefits affect labor markets?
4. How can asymmetric information make regulation of the labor market use- ful?
5. What is OSHA and how does it use design-based and performance-based standards?
6. How does the law constrain relations between companies and unions?

Readings

1. "Minimum Wage for Interns? It Misses the Point," *The Wall Street Journal*.
2. "Companies Are Cutting Part-Time Workers' Hours. Blame Obamacare?" *Forbes*.
3. "The $6-an-Hour Health Minimum Wage," John Goodman, *National Center for Policy Analysis Health Policy Blog*.
4. "Why Should Stage Hands At Carnegie Hall Make $400,000?," Susan Adams, *Forbes*.
5. "A License To Be a Florist? How Occupational Rules Can Be a Burden on Workers," *The Washington Post*).