

Economics 326: Monopsony

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Outline

1. Monopsony
2. Example

1 Monopsony

- We now will look at a producer who does take price as given in output markets but not in input markets.
- How could firms be monopsonists? First of all they could be monopsonists in labor markets as well as capital or intermediate input markets. Examples?
 - Fisher Body and GM

- Coal towns
 - Relevance to modern urban labor markets
- Lets suppose we have a firm which is a monopsonist. To simplify matters, lets assume there is only one factor of production: labor. In the competitive case, we have:

$$PQ(L) - wL$$

This implicitly assumes that the supply of labor to the firm is independent of the wage. In other words, labor supply is completely elastic. Suppose it wasn't perfectly elastic. Then you would have:

$$PQ(L(w)) - wL(w)$$

- Alternatively we could write everything in terms of the inverse labor supply curve:

$$PQ(L) - w(L)L$$

- Taking this second formulation, we get:

$$P \frac{dQ}{dL} - \frac{dw}{dL} L - w(L)$$
$$P \frac{dQ}{dL} = w(L) + \frac{dw}{dL} L$$

- Now remember that $\frac{dw}{dL} > 0$ (or at least this is usually what is assumed - people need a higher wage rate to induce them to work longer hours)
- Then the marginal revenue product (the additional amount of revenue from an additional worker) is greater than the wage:

$$P \frac{dQ}{dL} > w(L)$$

- This means that labor allocation is lower than in the absence of monopoly and thus output is also lower.

- If the firm could hire an additional worker without it causing an increase in the wage paid to all the other workers, the firm would do so. Alternatively, the value created by an additional worker is greater than the wage the worker would receive and yet the firm is not willing to hire the worker. It would be societally worthwhile to increase production. However, the firm must also transfer some of its surplus to workers by raising wages when it increases output and so it chooses not to.
- We can show this on a graph with labor supply, labor demand and the marginal expenditure curve:

$$\text{Labor Demand} : P \frac{dQ}{dL}$$

$$\text{Labor Supply} : L(w)$$

$$\text{Marginal Expenditure} : w(L) + \frac{dw}{dL}$$

2 Monopsony Example

- Suppose that the price of a good is $P = 10$ and the production function is constant returns to scale $Q(L) = 2L$. Lastly, assume that labor supply to the firm is given by: $L = 50w$.
- Note that a higher wage increases labor supply.
- Solving for the wage as a function of labor, we get:
 $w = \frac{L}{50}$
- We can now write the profit function:

$$\begin{aligned}\Pi(L) &= PQ(L) - w(L)L \\ &= 10 * 2L - \frac{L}{50}L\end{aligned}$$

- Taking first order conditions from the profit function, we get:

$$\begin{aligned}\frac{d\Pi}{dL} &= 20 - \frac{L}{25} = 0 \\ \implies L^* &= 500\end{aligned}$$

- From the labor supply equation, we can now solve for the wage:

$$w^* = \frac{L}{50} = 10$$

- Now suppose that the firm was forced to pay 20 per hour (marginal revenue product of a worker or the marginal value of a worker):
- The firm would then earn zero profits no matter what so it would be indifferent as to how many workers to hire:

$$\Pi = 20L - 20L = 0$$

- The amount of labor supplied would be determined by the labor supply curve:

$$L = 50w = 50 * 20 = 1000$$

- Notice that the monopsonist keeps the wage below marginal revenue product. In a competitive environment, workers would get 20 but the monopsonist keeps the wage at 10. Moreover, in order to keep the wage low, the monopsonist has to restrict employment down to 500 instead of 1000. This also restricts output.