

Labor Market Equilibrium: Fourth Lecture

LABOR ECONOMICS (ECON 385)

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Extension: the minimum wage revisited

- Here we reexamine the effect of the minimum wage in a non-competitive market. Specifically the effect is different if the market is characterized by a monopsony—a single buyer of a good.
- Consider the supply curve for a labor market as before. Also consider the downward-sloping VMP_L curve that represents the labor demand of a single firm.
 - But now instead of multiple competitive employers, this market has only a single firm that employs workers.
 - The effect of this on labor demand for the monopsony firm is that wage is not a constant value set exogenously by the competitive market. The wage now depends directly (and positively) on the amount of labor employed by this firm.

$$\Pi(L, K) = P * q(L, K) - w(L) * L - rK$$

where $w(L)$ is the market supply curve facing the monopsonist.

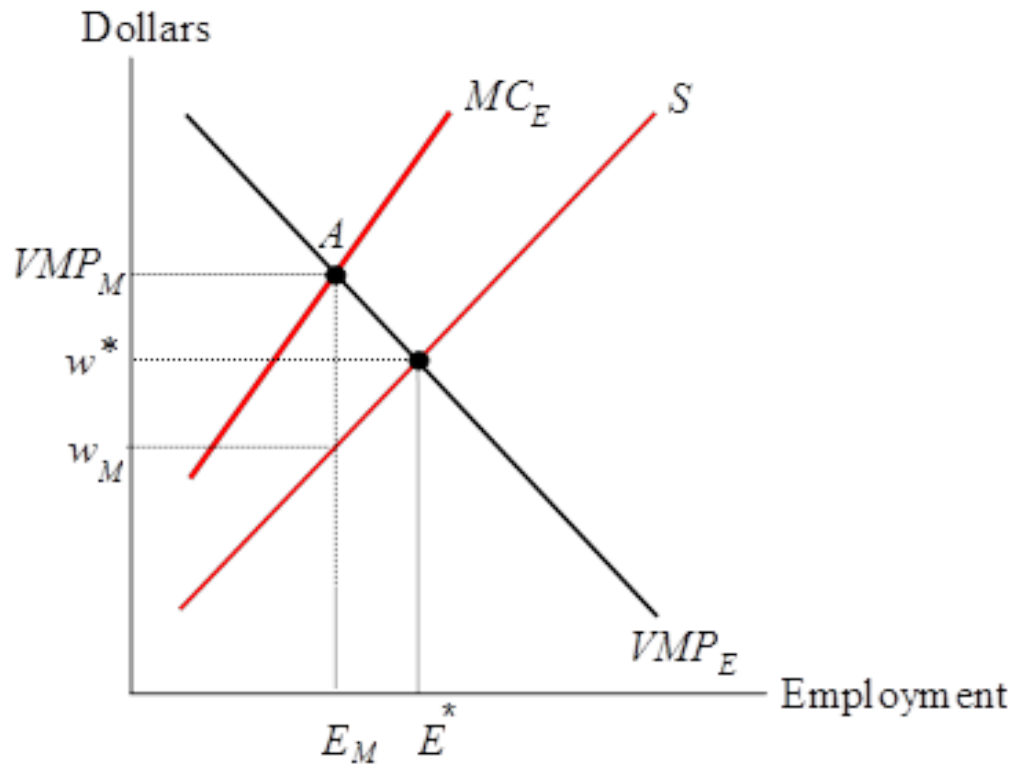
Monopsony hiring

- And now when the monopsonist considers how much labor to supply, it has to choose a wage that will attract the marginal worker. This wage is determined by the supply curve.
- The usual profit maximization condition—with a linear supply curve, for simplicity—yields:

$$\frac{\partial \Pi}{\partial L} = P * MP_L - \left(w + L \frac{\partial w}{\partial L} \right) = 0$$

where the last term in parentheses is the slope of the labor supply curve. When it is linear, the slope is constant (b), and the entire set of parentheses contains the marginal cost of hiring labor. The condition, as usual implies that the employer sets marginal benefit (VMP_L) equal to marginal cost; the only difference is that marginal cost is not constant now.

Monopsony hiring (continued)



- Specifically the marginal cost is a curve lying above the labor supply with twice the slope of the supply curve.
- And the intersection of MC and VMP_L will not be the same as the intersection of supply and VMP_L .
- To further explain the relationship, look at the marginal cost function (on next slide).

Monopsony hiring (concluded)

$$MC_{Labor} = w + L \frac{\partial w}{\partial L} = (\text{height of supply}) + L * (\text{slope of supply})$$

- Since the slope is positive, we're adding to the height of the supply curve, and as you move right (the higher L gets) the more is added to the height of the supply.

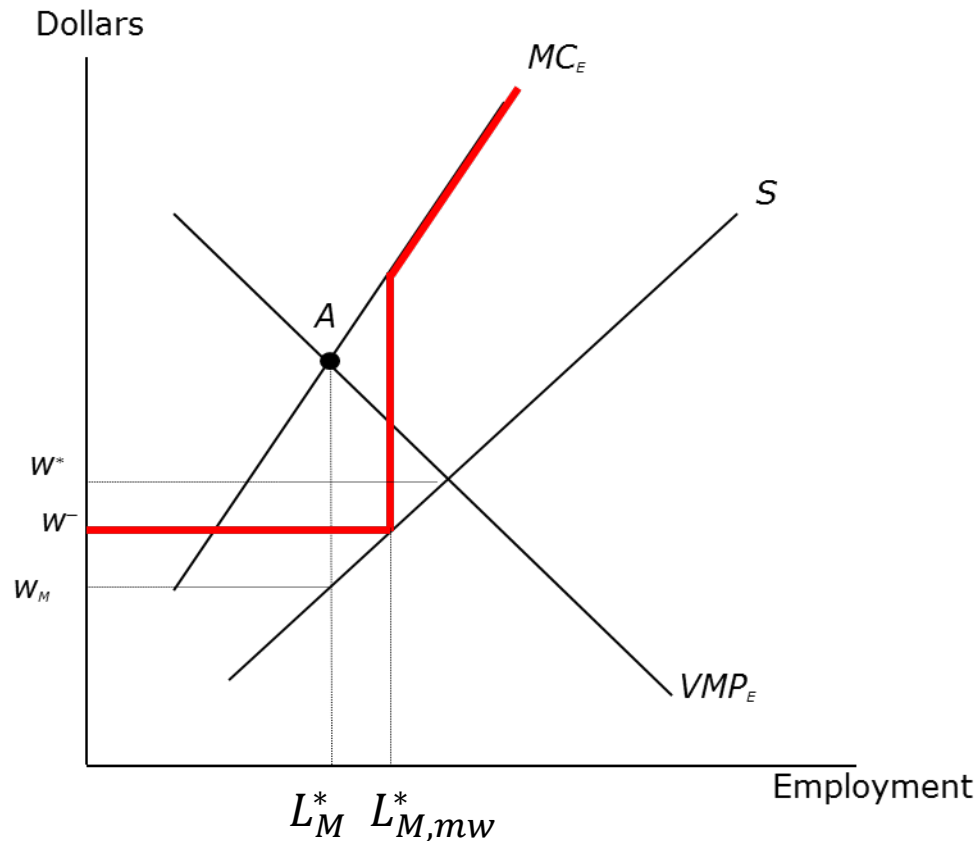
$$MC_{Labor} = w + L * b$$

- A monopsonist hires labor such that, $MC_{Labor} = VMP_L$, which occurs to the left of the “competitive” equilibrium (L^*). Call this point L_M^* . Note that this means that employment under a (single price) monopsonist is lower than the competitive level.

$$L_M^* < L^*$$

- Also note that the wage necessary to attract the marginal worker at L_M^* is the point above that level on the supply curve. Refer to it as w_M^* . This wage will be less than competitive wage w^* .
- Lastly note that the smaller employment with a monopsony hirer results in a DWL, consisting of the triangle between w^* , w_M^* , and MC_{Labor} . Thus there is a market failure (to maximize social welfare) when a monopsony operates in a market—quite similar to a monopoly in the goods market.

Minimum wage under monopsony



- Returning to the minimum wage, it should be noted that any minimum wage (\bar{w}) above w_M^* will be binding on the monopsonist.
- Additionally the minimum forces the monopsonist to hire more labor!
 - Since the level where $MC = VMP_L$ is now unavailable, the closest it can get to that point is where $w = \bar{w}$.
 - This occurs to the right of L_M^* . Call it $L_{M,mw}^*$.

Minimum wage (concluded)

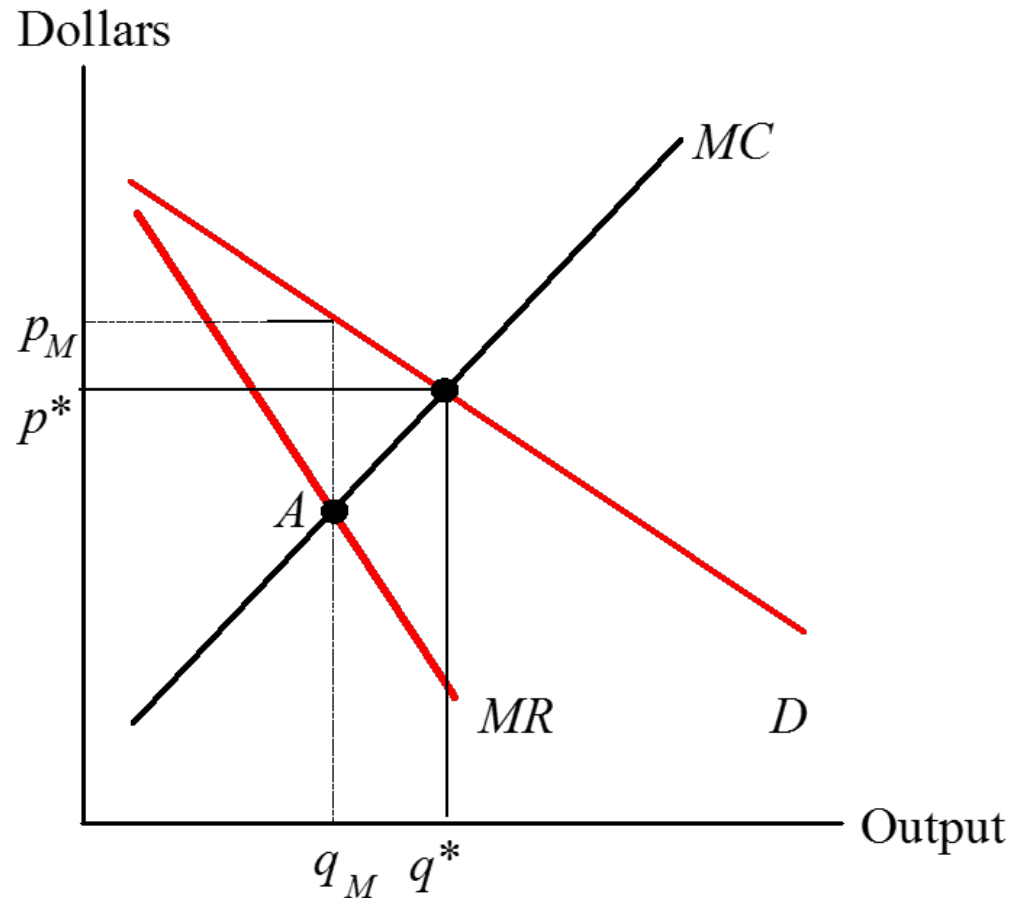
- With enough knowledge of the supply curve, the minimum wage could be chosen to induce the market to behave like the competitive outcome: $\bar{w} = w^*$ and $L_{M,mw}^* = L^*$.
- This would increase employment to its socially optimal level, as well as raising wages. And most importantly it eliminates the DWL from monopsony.

Extension: monopoly firms in competitive labor markets

Consider a goods market with a single seller (monopolist) like you've encountered in Principles of and Intermediate Microeconomics. The workers at this firm are hired in a competitive market (with wage w^*), so ignore the possibility of monopsony. But recall how a monopoly has an incentive to reduce output below the competitive (MC=Price) level.

- The implications for labor demand are, loosely speaking: less output, less employment.
- Since a (single price) monopolist has to decrease price when it thinks about selling more output, its marginal revenue curve lies below the demand curve for its output.

Revenue for a monopoly firm



- This leads it to maximize profit by producing an output such that $MC=MR$. This condition is satisfied with a smaller output level ($q_M < q^*$) than the competitive output and a higher price than P^* .
- Even though the price is greater for a monopolist, the marginal revenue is smaller.

Monopoly profit maximization

- Profit for a monopolist is:

$$\Pi(L, K) = P(q) * q(L, K) - wL - rK$$

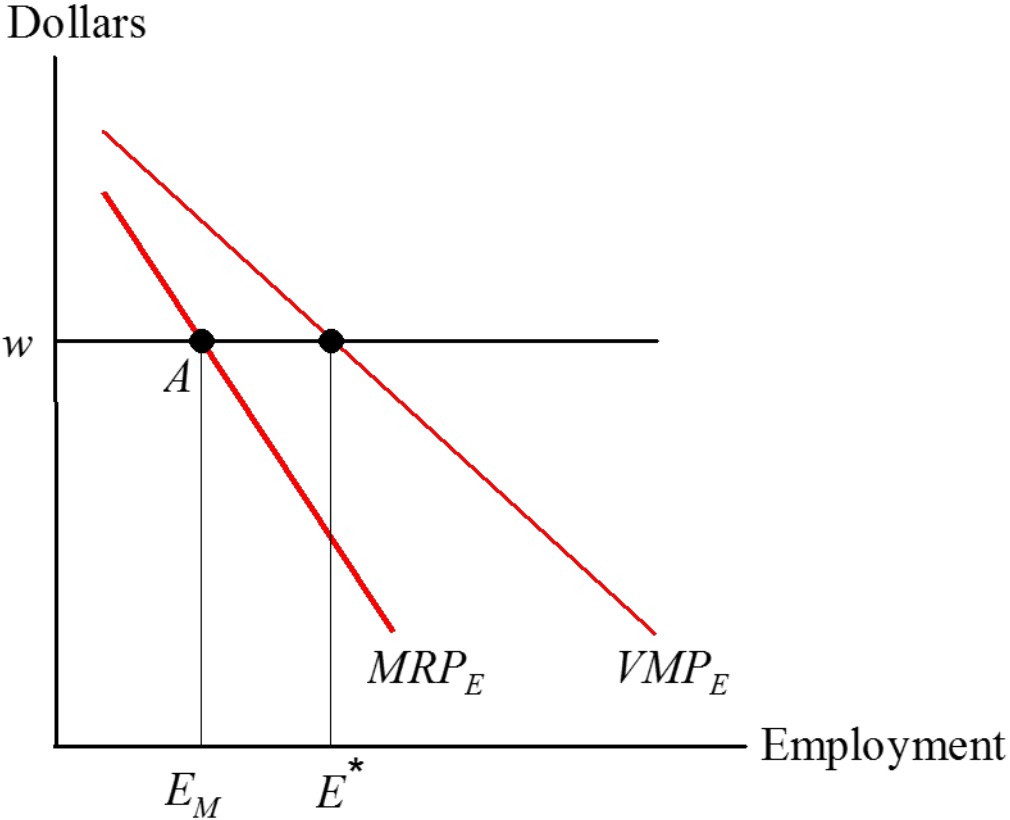
where $P(q)$ is the (inverse) demand function for the monopolist's output. When it maximizes profit, the monopolist solves:

$$\frac{\partial \Pi}{\partial L} = [MP_L(P + (\text{slope of inverse demand})q(L, K))] - w = 0$$

where the term in brackets is the marginal revenue product (MRP). Note that it contains the VMP_L —but also a second (negative) term. So the MRP curve lies below the VMP_L curve for a monopolist.

- Then when the monopolist makes its labor demand, it chooses a level where $MRP = w^*$. This occurs to the left of L^* . A monopolist hires less labor than it would if the market for its output was competitive.

Monopoly labor demand



Monopoly (concluded)

- Appropriate regulation of output monopolies positively impacts employment in the monopoly firm.
 - Issues surrounding the regulation of monopoly are discussed in Economics courses in *Industrial Organization*.
 - Numerous other policies relating to labor market equilibrium are discussed in a class on *Public Policy Economics* also.