The Labor Market Under Perfect Competition

• Firms DEMAND labor
• Consumers SUPPLY labor (workers)

• Consider labor supply first
  – How do workers decide on the number of hours to work each week?
Trade-offs

• Trade-off between consumption (from earning money) and leisure
  More hours spent working ➔ less leisure
  (leisure = all time not spent working)

  Opportunity cost of leisure = forgone consumption from working fewer hours
We use utility-maximizing analysis as in Chapter 6

- Worker seeks to max. utility from consumption and leisure by choosing optimal combination

- Suppose hourly wage = $7
Figure 9.1 A Budget Constraint Between Leisure and Income
• Steve chooses point $E_0$ where he works 6 hrs./day and his income is $7 \times 6 \text{ hrs.} = 42/\text{day}$

• He chose to work 6 hrs./day because at this level, the value he places on an hour of leisure is equal to the value of what he is able to buy with the money he earns by working one more hour.

• In other words,
  – Value placed on leisure = Marginal benefit of leisure
  – Value of what you can buy = Marginal cost of leisure (what you give up by not working)

If $MB > MC$, then work less
If $MB < MC$, then work more
Labor Supply Curve

• Changes in wage have two effects
  – Income effect: Leisure is a normal good, so as wages increase you “buy” more ⇒ work less
  – Substitution effect: As wages increase, the opportunity cost (price) of leisure increases, so you “buy” less ⇒ work more
  – If IE > SE, then ↑ wage ⇒ ↓ labor supplied
  – If SE > IE, then ↑ wage ⇒ ↑ labor supplied
Backward-Bending Labor Supply Curve

- Empirical evidence suggests that
  
  a. IE > SE at higher wages
     \(\uparrow\) wage \(\rightarrow\) \(\downarrow\) labor supplied
     \(\Rightarrow\) Labor supply curve has negative slope

  b. SE > IE at lower wages
     \(\uparrow\) wage \(\rightarrow\) \(\uparrow\) labor supplied
     \(\Rightarrow\) Labor supply curve has positive slope
Figure 9.2 The Labor Supply Curve
Labor Demand

- How does a firm decide how much labor to hire?

- Two methods:
  1. Firm chooses $Q^*$ where $MC = MR$
     - From production function, find qty. of labor required to produce $Q^*$
  2. Firm compares marginal benefit and marginal cost of hiring one more unit of labor
Figure 9.6 The Demand for Labor
• Marginal benefit of hiring one more worker is the additional revenue he or she generates
  - The last worker’s output multiplied by the price of the product
  - Extra output = marginal product of labor
    ➔ Extra revenue = MPL x P = value of marginal product

• Marginal cost is the wage
Profit-Maximization

• As long as MB of hiring one more unit of labor exceeds MC, then hire more labor
• As long as MC exceeds MB, then hire less
• Profit-maximizing quantity of labor is where MC = MB
  ➞ value of marginal product = wage
  or, $P \times MPL = wage$
Labor Demand Curve

• Law of diminishing marginal product ➔ marginal product of labor decreases as more labor is hired (VMP also decreases)
  – VMP curve has negative slope
• When wage = \( w_1 \), the VMP equals the wage at \( L_1 \)
• ➔ The VMP curve is the labor demand curve (at higher wages, less labor is demanded)
Figure 9.7 The Demand Curve for Labor
What happens when the price of the firm’s output changes?

• When $P \uparrow$, $VMP \uparrow (P \times MPL)$
• Labor demand curve shifts right
  – At every wage, the demand for labor increases
Figure 9.8 Effect of Price Change on the Demand Curve for Labor
Equilibrium in the Labor Market:

- Surplus of labor: wage falls
- Shortage of labor: wage rises

\[ D_L = VMP \]
Equilibrium in the Labor Market

• Wage adjusts until demand for labor equals supply of labor
  – If $S_L > D_L$ (unemployment), then competition lowers wages
  – If $S_L < D_L$, firms are forced to raise wages

• What if size of labor force increases?
  – $S_L$ shifts right, wages fall

• What if technological improvements lead to increases in MPL?
  – $D_L$ shifts right, wages rise