Intermediate Microeconomics Outline II: Chapters 6-9

6. Firms and Production
   • Production Function
   • Short-run (at least one fixed input) and Long-run (no fixed inputs)
   • Production with a single variable factor
     ○ Total, Average, and Marginal Products
     ○ Relation between Marginal and Average
     ○ Law of Diminishing Returns
   • Production with two variable inputs (e.g., long-run)
     ○ Isoquants
       ○ Marginal Rate of Technical Substitution: \( MRTS_{L,K} = MP_L/MP_K \) (slope of isoquant)
       ○ Shape of isoquants and substitution (more sharply curved = more complementary)
       ○ Constant, Diminishing and Increasing Returns to Scale

7. Costs
   • Costs in Short-run: FC (from fixed factor K), VC (from variable factor L)
   • Shape of SR Cost Curves: ATC, AVC, MC
   • Long-run Cost Minimizing Inputs
     • Minimum requires \( MRTS_{L,K} = w/r \). Equivalently, \( MP_K/r = MP_L/w \).
   • Deriving the Cost Function
   • Relation of SR and LR Cost Curves
     • In short run, \( MC = w/MP_L \). In long run, \( MC = w/MP_L = r/MP_K \)

8. Competitive Firms and Markets
   • Costs as Opportunity Costs: Explicit and Implicit Costs
   • Perfectly Competitive Markets
     • Price-taking implies \( p = MR \)
     • Profit Maximization: \( MR = MC \) becomes \( p = MC \)
   • Short-run Shutdown condition \( (p < AVC) \)
     • Supply is MC curve (above AVC)
     • Profitability (compare \( p \) and \( ATC \))
     • Entry and Exit imply Zero Long-run Economic Profit
   • Increasing and Constant Cost Industries
   • Analysis of Economic Changes (Demand, Costs) in Short and Long Runs
     ○ Demand Shifts
     ○ Changes in Factor Prices
     ○ Productivity Changes
     ○ Taxes
9. Applying the Competitive Model

- Demand Curve as Marginal Value to Consumer (aka Marginal Willingness to Pay)
- Consumer’s Surplus
- Producer Surplus (note: in short run PS = Profit + FC)
- Price Ceilings and Floors
- Price Supports
- Tariffs and Quotas
- Excise Taxes: Excess Burden, Incidence & Elasticity

\[ t_D = t \times \frac{|\varepsilon S|}{|\varepsilon S| + |\varepsilon D|}, \quad t_S = t \times \frac{|\varepsilon D|}{|\varepsilon S| + |\varepsilon D|} \]