I. Supply & Demand

Elasticity of y wrt x= (x/y)(∂y/∂x) or in log form (∂lny/∂lnx), range for D: (-∞, 0] S: [0,∞)

Demand Elasticity: **ξ**<-1 elastic, **ξ**=-1 unitary, 0> **ξ**>-1 inelastic; Supply Elasticity: 0< **ξ**<1 inelastic, **ξ**=1 unitary, **ξ**>1 elastic

Comparative Statics: dp/da = (-∂S/∂a)/(∂S/∂p+│∂D/∂p│) for supply shift, similarly for demand shift, then ∆p\* = (dp/da)∆a & ∆Q\*=(∂D/∂p)∆p\*

Determinants of D: Price of related goods, income, # of consumers, future expectations, tastes/preferences

Determinants of S: resource/price availability, government actions (taxes/regulations, subsidies), technology/productivity, # of firms, future expectations

Tax incidence: On consumers = ξS /( ξS - ξD) on suppliers = ξD /( ξS - ξD) \*multiply by tax size, t.

II. Consumer Choice & Demand

MRS = Slope of IC = -MU1/MU2 ;Marginal Utility = MUi= ∂U/∂qi Budget line slope = -p1 / p2

Constrained Optimization: maxq1 , q2 L = U(q1 ,q2) + λ( Y-p1q1-p2q2) take FOC’s and solve for q1 ,q2

Income Elasticity of demand: **ξ** = (∂Q/ ∂Y)(Y/ Q)

Consumer Surplus = CS = area below demand curve above price line.

For quasilinear utility, CS = u(q1\*) - p1q1\*; First-orderapprox: -∆CS = ∆p[q1] + [(∆p∆q) / 2]

III. Production, Cost & Supply

Returns to Scale for CES prod fn: q = (Kp + Lp)a/p IRS if a>1 CRS if a=1 DRS if a<1

MRTS = Slope of Isoquant = -MPL / MPK ; Slope of Isocost line = -w / r

Elasticity of Substitution: [%∆ K / L] / [%∆│MRTS│] = [∂ln(K/L)] / [∂ln(│MRTS│)]

Total C = FC + VC(q) MC = ∂C/∂q AVC = [VC(q)] / q] AC = C / q SRMC = w / MPL

Tangency condition: MPL / MPK = w/r = -MRTS i.e. slope of isocost = slope of isoquant; **min cost pt.**

λ= r /MPK = w / MPL = MC “equal bang for the $”

FC = sunk costs + avoidable costs ; in long-run, there are no fixed costs

Supply in SR = MC where it is upward-sloping above AVC ; with economic profit above AC

Supply in LR is perfectly elastic at min AC (unless industry-wide effects cause IRS or DRS).

Profit max at MC(q\*) = p (= MR(q\*) for competitive firms); Profit: π = R – C = R(q) – VC(q) – FC;

Avg Profit: π/q = P-AC

Expenditure avg Income Elasticity: **θ1** ξ1 + **θ2** ξ2 = 1

Important Characteristics of Competitive Markets: 1) Low barriers to entry 2) Homogenous products 3) Low transaction costs

Residual Demand: Dr(p) = D(p) – So(p) where Dr(p) : residual quantity demanded ,D(p): Total quantity demanded by market, So(p): Supply of other firms

Market elasticity: εi = ηε – (η – 1)η0 where η: number of identical firms, η0: elasticity of supply of each of the other firms

Profit: π = R – C → π(q) = R(q) – C(q) → π(q) = R(q) – VC(q) – FC

Avg Profit: π/q = P-AC

Total Output (in Long Run): Q = nq where n: number of firms, q: quantity firms supply