2.1 Demand, supply, equilibrium and elasticity

Name: _____ Class: _____ Date: _____ **Total: 23 marks**

KEY WORDS price elasticity of demand • equilibrium

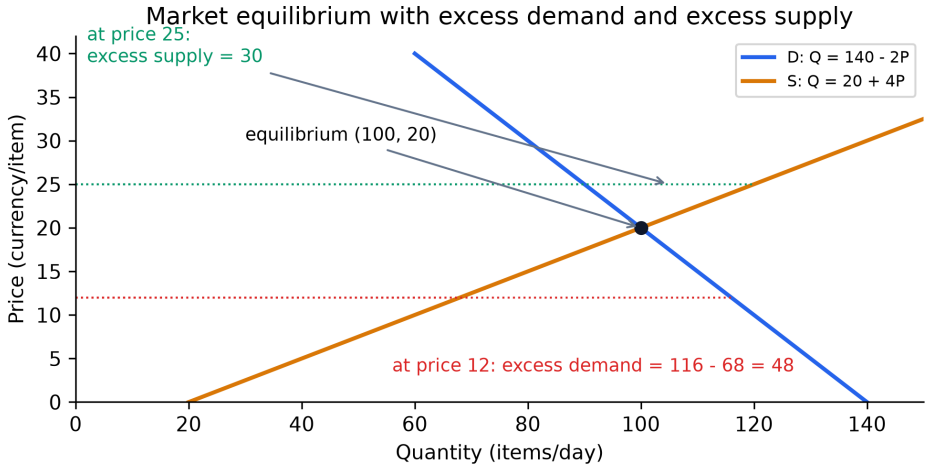
Demand, supply, equilibrium and elasticity

Objective

Apply movements versus shifts, equilibrium and disequilibrium arithmetic, and the PED, PES and YED formulae with the total-revenue test (spec 1.1.3–1.1.4). Model: $Q_d = 140 - 2P$, $Q_s = 20 + 4P$.

1 Key knowledge and worked examples

Markets and elasticities. Equilibrium: $140 - 2P = 20 + 4P \rightarrow$ P = 20, Q = 100. At P = 12: excess demand = 116−68 = 48; at P = 25: excess supply = 120−90 = 30. PED = $\%\Delta Q_d \div \%\Delta P$ (20→22 gives −0.4, inelastic; TR 2000 → 2112 rises). PES = $\%\Delta Q_s \div \%\Delta P$ (20→24 gives +0.8). YED: +10% income, +8% quantity → +0.8, normal necessity.



Original model; both excesses are computed in the solutions.

2 Practice

2.1 Define demand and state whether a fall in the good's own price shifts or moves along its demand curve. [2]

2.2 Name any four factors that shift the demand curve. [2]

2.3 Name any three factors that shift the supply curve. [2]

2.4 Solve the model's equilibrium price and quantity. [2]

2.5 At P = 12, calculate the excess demand. [2]

2.6 At P = 25, calculate the excess supply. [2]

3 Exam-style questions

3.1 *(Original.)* The price rises from 20 to 22 and quantity demanded falls from 100 to 96. Calculate PED and use the total revenue test to classify demand over this range. [4]

3.2 *(Original.)* The price rises from 20 to 24 and quantity supplied rises from 100 to 116. Calculate PES, interpret it, and explain why the PES of fresh strawberries is lower than the PES of tinned strawberries. [4]

3.3 *(Original.)* Incomes rise 10% and the quantity of bus travel demanded falls 4%. Calculate YED and classify the good; state what happens to demand for bus travel in a recession. [3]

Solutions

2.1 Demand is the quantity consumers are willing AND able to buy at each price over a period. A fall in the good's own price is a MOVEMENT ALONG the curve (quantity rises).

2.2 Any four of: advertising; income; fashion and tastes; price of substitute goods; price of complementary goods; demographic changes.

2.3 Any three of: costs of production; changes in technology; indirect taxes; subsidies; natural factors (natural disasters and weather).

2.4 $140 - 2P = 20 + 4P$ gives $120 = 6P$, so $P = 20$ and $Q = 100$.

2.5 $Q_d(12) = 140 - 24 = 116$; $Q_s(12) = 20 + 48 = 68$; excess demand $= 116 - 68 = 48$ items.

2.6 $Q_s(25) = 20 + 100 = 120$; $Q_d(25) = 140 - 50 = 90$; excess supply $= 120 - 90 = 30$ items.

3.1 $\%\Delta Q_d = -4\%$ (from 100 to 96); $\%\Delta P = +10\%$ (from 20 to 22); $PED = -4 \div 10 = -0.4$. TR at $20 = 2000$; TR at $22 = 22 \times 96 = 2112$. Revenue ROSE when price rose, so demand is price INELASTIC ($|PED| = 0.4 < 1$) over this range.

3.2 $\%\Delta Q_s = +16\%$ (100 to 116); $\%\Delta P = +20\%$ (20 to 24); $PES = 16 \div 20 = +0.8$: supply is inelastic (quantity responds less than proportionately). Fresh strawberries are perishable and grow in season – no stocks, no spare capacity, fixed land – so their PES is low; tinned strawberries can be stocked and production scaled, so supply is more elastic.

3.3 $YED = -4 \div 10 = -0.4$: negative, so bus travel is an INFERIOR good. In a recession incomes fall, so the quantity of bus travel demanded RISES (the income effect reverses).

Local review guidance: percentage changes computed before dividing, sign convention stated; the TR test quoted with both revenues; (R1) the PES contrast names stocks, capacity and perishability. This is authored classroom guidance.