5.2.1 Market structures, concentration and monopoly (cut of 5.2)

Name: _____ Class: _____ Date: _____ **Total: 26 marks**

KEY WORDS Nash equilibrium • concentration ratio

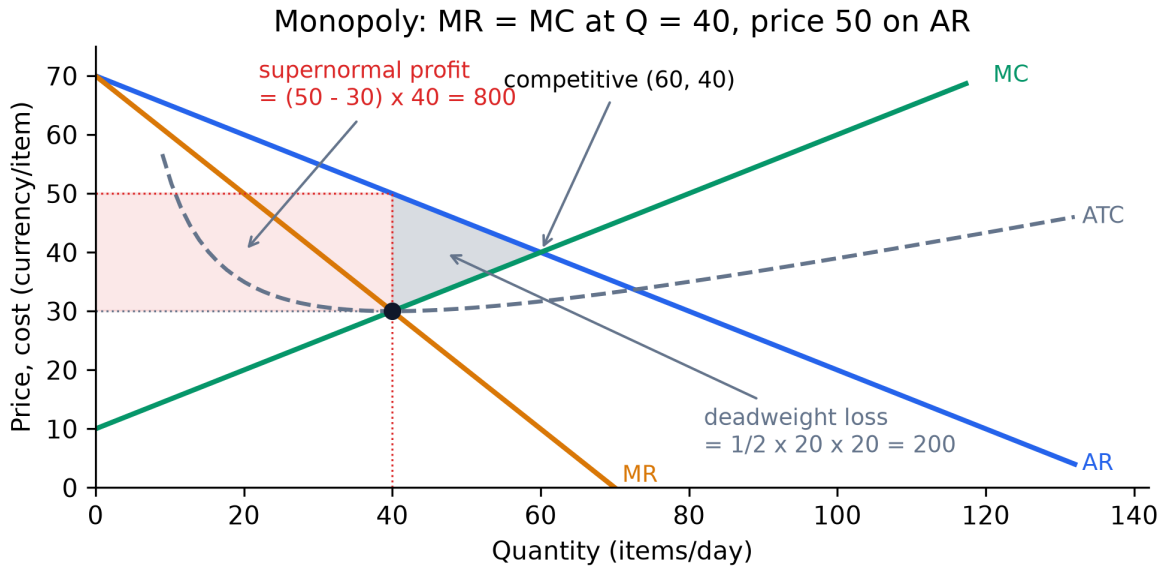
Market structures, concentration and monopoly

Objective

Apply the efficiency concepts, calculate concentration ratios, and analyse perfect competition, oligopoly game theory and monopoly profit maximisation with the shared model (spec 3.3.3 rows 1–6, a narrower cut of subtopic 5.2).

1 Key knowledge and worked examples

Structures. Allocative efficiency: P = MC; productive: output at min ATC; dynamic: innovation funded by profit; X-inefficiency: waste above the cost floor. Perfect competition: price takers, long-run P = min ATC, both static efficiencies. Oligopoly: interdependence; the prisoners' dilemma makes defecting dominant, so both rest at the Nash (2, 2) though collusion (4, 4) pays more. Monopoly on the shared model: MR = MC at Q = 40, P = 50, ATC = 30, supernormal profit 800; competitive benchmark (60, 40); deadweight loss ½ × 20 × 20 = 200.



Original model; the profit rectangle and the deadweight triangle are computed in the text.

2 Practice

2.1 Define allocative and productive efficiency. [2]

2.2 Market shares are 40, 25, 15, 10 and 10 percent. Calculate the four-firm concentration ratio and interpret it. [3]

2.3 State the four assumptions of perfect competition and the long-run outcome for price and profit. [3]

2.4 In the game matrix, what is the Nash equilibrium and why is collusion unstable? [3]

2.5 Name any four barriers to entry from the specification. [2]

3 Exam-style questions

3.1 *(Original.)* On the model AR: $P = 70 - Q/2$, MR: $P = 70 - Q$, MC: $P = 10 + Q/2$: calculate the monopoly output and price, the supernormal profit if ATC = 30 at that output, and the deadweight loss against the competitive outcome. [5]

3.2 *(Original.)* Explain, with a diagram, why a monopolistically competitive firm earns only normal profit in the long run. [4]

3.3 *(Original.)* What conditions are needed for third-degree price discrimination, and who gains and loses? [4]

Solutions

2.1 Allocative: price equals marginal cost ($P = MC$) – output matches what society values. Productive: production at minimum average total cost.

2.2 CR4 = 40 + 25 + 15 + 10 = 90%: the four largest firms hold 90 percent – a highly concentrated market with substantial market power (caveat: ratios miss imports and potential entry).

2.3 Many small firms; identical products; perfect information; free entry and exit. Long run: entry drives price to minimum ATC, so only normal profit remains, with both allocative and productive efficiency.

2.4 The Nash equilibrium is (defect, defect) = (2, 2): whatever the other does, defecting pays more ($6 > 4$ if the other colludes; $2 > 1$ if it defects), so both defect. Collusion (4, 4) is unstable because each has a profitable incentive to cheat – and collusion may be illegal.

2.5 Any four of: economies of scale; limit pricing; patents; branding; sunk costs; legal barriers.

3.1 Monopoly: $70 - Q = 10 + Q/2$ gives $60 = 1.5Q$, so $Q_m = 40$; price on AR: $P_m = 70 - 20 = 50$. Supernormal profit $= (P - ATC) \times Q = (50 - 30) \times 40 = 800$ per day. Competitive: $70 - Q/2 = 10 + Q/2$ gives $Q_c = 60$, $P_c = 40$. Deadweight loss $= \frac{1}{2} \times (60 - 40) \times (50 - 30) = \frac{1}{2} \times 20 \times 20 = 200$ – the value of output between 40 and 60 whose marginal benefit (AR) exceeded its marginal cost.

3.2 Short run: differentiated products give each firm a downward-sloping demand curve; if price exceeds ATC it earns supernormal profit. Entry of close substitutes shifts each firm's demand LEFT and makes it more elastic until the demand curve is tangent to ATC: price equals ATC (normal profit only) but exceeds MC – excess capacity, so not allocatively efficient, and output is below min ATC, so not productively efficient either.

3.3 Conditions: market power (price-setting ability); separable groups with DIFFERENT price elasticities; no resale between groups (plus a means of separating them). Gainers: the firm (converts consumer surplus into profit; total output may rise). Losers: the inelastic group pays more; the elastic group may pay less – overall, allocative efficiency usually falls.

Local review guidance: the MR = MC equation solved before either price is read; the DWL uses the gap between AR and MC over the lost output; (R1 3.3) gains and losses split BY GROUP, not in aggregate. This is authored classroom guidance.