

Microeconomics, Module 8: "Competition: Long Run" (Chapter 7)

Illustrative Test Questions

(The attached PDF file has better formatting.)

Question 8.1: Long Run Equilibrium

When is a competitive profit-maximizing firm in a long-run equilibrium?

- A. When the market price equals both its marginal cost and its average total cost.
- B. When the market price equals both its marginal cost and its average variable cost.
- C. When the market price equals its break-even price.
- D. When the market price is less than its average cost but greater than its average variable cost.
- E. When the market price is high enough for the firm to earn a positive economic profit.

Answer 8.1: A

Question: Should statement A say *minimum* average total cost?

Answer: The marginal cost curve intersects the average total cost curve at the minimum average total cost. The marginal cost curve intersects both the average total cost curve and the average variable cost curve at their minimum. In a long-run competitive equilibrium, the minimum average total cost is the market price.

Question 8.2: Industry and Firm Supply Curves

If the industry's short-run supply curve equals the horizontal sum of individual firms' short-run supply curves, which of the following may we infer?

- A. The firms are earning zero economic profits.
- B. There is no factor-price effect.
- C. Industry expansion would drive up the prices of variable inputs.
- D. The industry is a constant-cost industry.
- E. The supply curves of the firms are perfectly horizontal.

Answer 8.2: B

Question: Statement A may not be related to supply curves, but isn't this true in a competitive market?

Answer: It is true in the long-run, not in the short run.

Question 8.3: Marginal Cost

In a competitive market, firms' marginal costs are all equal to the market price. This implies that in a long-term equilibrium, which of the following is true?

- A. The equimarginal principle is not valid for competitive markets.
- B. The firms' average variable costs must also be equal to the market price.
- C. The firms' average total costs must also be equal to the market price.
- D. A competitive industry produces its product at the lowest possible cost, so future cost decreases are not expected.
- E. Total profit for firms in a competitive industry must be positive.

Answer 8.3: C

Question: Why is Statement C true but not Statement B?

Answer: This is competitive pressure:

- If the firms' average total costs exceed the market price, firms lose money, and some exit the industry, pushing up the market price.
- If the firms' average total costs is less than the market price, firms earn economic profits, and some new firms enter the industry, pushing down the market price.

Question: This is true for firms in general; what is the relation to competitive markets?

Answer: A competitive industry has no significant barriers to entry. In an industry with large barriers to entry, incumbent firms may earn economic profits, but no new firms enter and drive down the market price.

Question: What is wrong with profits? If a firm didn't make profits, it would change to another business.

Answer: Economic profits are the earnings in excess of normal profits; accounting profits include both normal profits and economic profits.

Question: Are normal profits the same for all firms?

Answer: The corporate finance course discusses normal profits, which are the opportunity cost of capital times the capital held, or the economic income. Zero economic profits mean a zero net present value.

The normal profit depends on the systematic risk of the firm. Landsburg discusses systematic risk in a later chapter. This topic is covered in the corporate finance course, we don't emphasize it for the microeconomics course. A firm with a higher systematic risk has a higher opportunity cost of capital and a higher normal profit.

Question 8.4: Cost Curves

Suppose all firms in a competitive industry are identical and have both variable costs and fixed costs. Let MC = marginal cost, ATC = average total cost, AVC = average variable cost, and P = price. If the industry is in long-run equilibrium, which of the following is correct?

- A. $P = MC = AVC < ATC$
- B. $MC = AVC < ATC = P$
- C. $AVC < MC < ATC = P$
- D. $AVC < MC = P < ATC$
- E. $AVC < MC = P = ATC$

Answer 8.4: E

Question: A competitive industry is generally in short run equilibrium, though not always in long-run equilibrium. If the industry is in short run equilibrium, which relations above are true?

Answer: For any firm with fixed costs, $AVC < ATC$; this relation appear in all five choices. For a competitive firm in short run equilibrium, $P =$ marginal revenue; since marginal revenue equals marginal cost for any firm, $P = MC$, as in choices A, D, and E. In the short run, costs and market demand can change, and any of these three choices could be correct.

Question 8.5: Break-Even Price

A competitive firm's break-even price equals the minimum value of its

- A. Marginal cost
- B. Average total cost
- C. Average variable cost
- D. Average marginal cost
- E. Fixed and sunk costs

Answer 8.5: B

Question 8.6: Supply Curve

In which of the following situations will the long run supply curve be horizontal?

- A. When long run average costs in the industry increase as output is expanded.
- B. When firms are identical and there is a factor price effect.
- C. When firms have different break-even prices.
- D. When firms are identical and input prices do not change as the industry expands.
- E. Only if all firms have horizontal long run supply curves.

Answer 8.6: D

Statements A and D: If average costs increase as the industry expands, the supply curve is upward sloping, since higher prices are needed to induce greater production.

Statements B, D, and D: If firms are not identical, different sizes may be optimal for different levels of production, and the supply curve may be sloped.

Statement E: If all firms have horizontal long run supply curves, the industry long-run supply curve is horizontal, but this is not a necessary (or common) condition.

Question: Which condition is more common: identical firms or constant costs?

Answer: Many industries have constant costs. Most industries are not heavy users of a sparse resource. A large industry may have more efficient suppliers, but this is not generally the case.

But few firms are identical; in particular, size affects efficiency. Grocery stores, food stores, and supermarkets may sell the same goods, but the differences in size cause large differences in efficiency.

{The final exam does not cover increasing and decreasing cost industries.}

Question 8.7: Industry Supply Curve

Suppose a competitive industry is initially in a long run equilibrium. If firms' fixed costs increase, the industry's supply curve will

- A. Shift to the left in the short run and shift further to the left in the long run.
- B. Shift to the right in the short run and shift further to the right in the long run.
- C. Shift to the left in the short run but not shift further in the long run.
- D. Shift to the right in the short run but not shift further in the long run.
- E. Remain unchanged in the short run but shift to the left in the long run.

Answer 8.7: E

Fixed costs don't affect short run decision making. In the long-run, higher fixed costs mean higher average total costs. Since it costs more to produce the good, the industry produces a lower quantity for any price; this is a leftward shift of the supply curve.

Question: Do the equilibrium price and quantity increase or decrease?

Answer: Price equals average total cost, so price increases. From the market demand curve, the quantity decreases.

Question 8.8: Deli Sandwiches

Suppose deli sandwiches are sold in a competitive constant-cost industry and suppose the price of meat rises. In the long run, the price of deli sandwiches rises because

- A. Demand for deli sandwiches falls
- B. Sandwich shops have higher fixed costs
- C. Sandwich shops have higher variable costs
- D. The higher meat prices lead to higher bread prices
- E. Some sandwich shops shut down.

Answer 8.8: C

Question: If the price rises, doesn't demand fall?

Answer: The quantity demanded falls, not the demand curve itself.

Question: If price rises and quantity demanded falls, don't some shops close down?

Answer: Some shops may close, particularly if the demand for sandwiches is very elastic. This is a consequence of the price rise, not a cause of the price rise. It may not occur if demand is relatively inelastic and all shops reduce in size.

Question 8.9: Excise Tax

Which of the following describes the economic incidence of an excise tax levied on a competitive constant-cost industry with a downward sloping market demand curve?

- A. The economic incidence falls entirely on firms in both the short run and the long run.
- B. The economic incidence falls entirely on consumers in both the short and long run.
- C. The economic incidence is split between firms and consumers in the short run, but it falls entirely on consumers in the long run.
- D. The economic incidence is split between firms and consumers in both the short run and the long run, but it falls heavier on consumers in the long run.
- E. The economic incidence is split between firms and consumers in both the short run and the long run, but it falls heavier on firms in the long run.

Answer 8.9: C

The economic incidence of a tax depends on the slopes of the supply and demand curves.

- If the supply curve is perfectly elastic, the producers incur none of the tax.
- If the demand curve is perfectly elastic, the consumers incur none of the tax.
- If the supply curve is perfectly inelastic, the producers incur all of the tax.
- If the demand curve is perfectly inelastic, the consumers incur all of the tax.
- If both the supply and demand curves are sloped, both consumer and producers incur some of the tax.

Perfectly inelastic curves do not occur unless the government mandates that producers or consumers sell or buy a product regardless of the price. In Landsburg's view, even the government mandate has little or no effect, since the government cannot control other (non-price) costs of production or consumption. Not only do price controls and central planning not work; they don't even control prices or production.

In the short run, the supply curve is always upward sloping. For a constant cost industry, the long-run supply curve is horizontal.

{The economic incidence of taxes is tested on the final exam.}

Question 8.10: Competitive Industry

Which of the following is true for a competitive industry?

- A. If fixed costs rise for all firms in a competitive industry, industry output decreases in the short run, as some firms shut down.
- B. In the long run, a firm shut downs if its profits are negative.
- C. Long-run negative profits occur when price falls below marginal cost.
- D. The part of the long-run marginal cost curve that lies *below* the long-run average cost is not part of the firm's supply curve.
- E. None of A, B, C, or D is true.

Answer 8.10: D

Statement A is false. Fixed costs are not marginal costs and do not affect short run production. Output does not change.

Statement B is false: Firms *exit* in the long run; they *shut down* in the short run.

Statement C is false. Negative profits occur if price falls below *average cost*.

Statement D is true. The firm exits if price is below long-run average cost.

Question 8.11: Short and Long-Run Elasticities

Which of the following is true regarding short and long-run price elasticity of supply in a competitive industry?

- A. The firm's long run supply curve is *less* elastic than its short-run supply curve, but the industry's short and long-run supply curves have the same elasticity.
- B. The firm's long run supply curve is *more* elastic than its short-run supply curve, but the industry's short and long-run supply curves have the same elasticity.
- C. The industry's long run supply curve is *less* elastic than its short-run supply curve, but the firm's short and long-run supply curves have the same elasticity.
- D. The industry's long run supply curve is *more* elastic than its short-run supply curve, but the firm's short and long-run supply curves have the same elasticity.
- E. The long-run supply curve is more elastic than the short run supply curve for both the industry and the individual firm.

Answer 8.11: E

Exercise 8.12: Zero Economic Profit

Why do firms operate if they earn zero economic profit?

Solution 8.12: Zero economic profit includes the appropriate return on capital. The firm's managers and employees earn salaries, and the firm's owners earn a market return on their capital. The firms earn positive accounting profits that are as large as they might earn in the next best use of their time and capital.

Illustration: A college graduate has three job offers:

- An insurer has an actuarial job opening paying \$25,000 a year.
- A bank has a loan department job opening paying \$25,000 a year.
- An investment firm has a junior analyst job opening paying \$25,000 a year.

The three jobs are equally attractive. Each job gives economic profits of zero, since the next best job offer is just as good. But not working at any of the three jobs give economic profits of $-\$25,000$.

Question 8.13: Economic Profits

If a firm in a competitive industry expects to earn zero economic profits, it will

- A. Shut down.
- B. Exit.
- C. Raise prices.
- D. Increase quantity.
- E. None of A, B, C, or D is true.

Answer 8.13: E

Zero economic profits is the expected return for firms in a competitive industry.

Question 8.14: Accounting Profits

If a firm in a competitive industry and operating at its long-run optimal production level expects to earn zero accounting profits, it will

- A. Shut down.
- B. Exit.
- C. Raise prices.
- D. Increase quantity.
- E. None of A, B, C, or D is true.

Answer 8.14: B

Zero accounting profits is negative economic profits. The firm is losing money, so it will shut down. It is producing at minimum average cost, so changing quantity won't help. It faces a horizontal demand curve, so it can't increase prices.

Question 8.15: Accounting Revenue and Expenses

A life insurance company has a Home Office in downtown Tokyo with 100,000 square feet, which it could lease for \$75 a square foot. If its accounting revenue equals its accounting expenses, which of the following is true?

- A. Accounting profit is zero; economic profit is positive.
- B. Accounting profit is zero; economic profit is negative.
- C. Accounting profit is positive; economic profit is zero.
- D. Accounting profit is negative; economic profit is zero.
- E. None of A, B, C, or D is true.

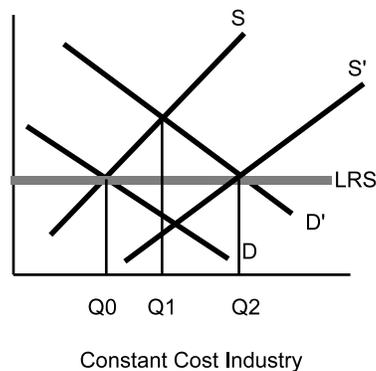
Answer 8.15: B

Economic profit subtracts the opportunity cost of capital, which includes the \$7.5 million the company could earn by leasing its office space.

Exercise 8.16: Rise in Demand

Show graphically the short-run and long-run effects of a rise in demand in a constant-cost competitive industry.

Solution 8.16: S and S' are short run supply curves before and after the rise in demand. If demand increases from D to D' , quantity increases first from Q_0 to Q_1 and then to Q_2 , at which point there is a new short run industry supply curve, S' .



Exercise 8.17: Rent Control

The text discusses short-run and long-run effects of removing a rent control on the price and supply of housing. Explain what happens, using both a graph and verbal explanation.

Solution 8.17: Before rent control is imposed, the rent is 400. The price with rent control is 200, so in the long-run, the quantity fall to Q_1 . If the rent control is removed, the price first moves to 500 and then eventually falls back to 400.

