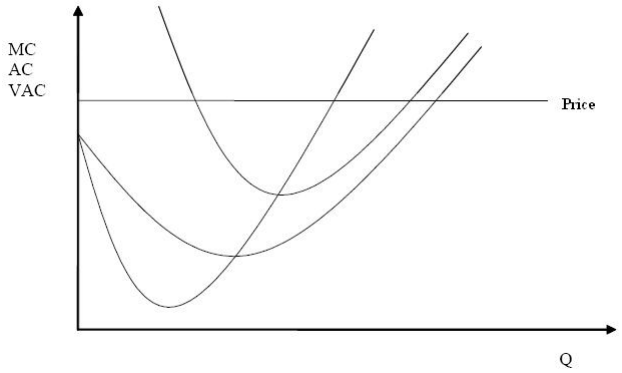
Microeconomics: Monika Köppl–Turyna

Problem Set 7

Key concepts:

- Price-taking firm
- Profit maximization
- The shut–down condition
- Firm's supply curve
- Perfect competition
- Economic vs. accounting profit
- Producer's surplus
- Price elasticity of supply

1. In the figure there are three cost curves: marginal cost curve, average cost curve and average variable cost curve. Label the curves and present graphically the economic profit as well as the producer's surplus.



2. Firms in a perfectly competitive market have the following average cost curves

$$ATC = Q^2 - 5Q + 15.$$

   (a) Is this a short run or a long run cost curve?

   (b) Find the supply curve of a typical firm.

   (c) Assume that the market price is 15 Euro. Find the quantity produced by the typical firm and the corresponding profit.

   (d) Does the firm want to produce given your result in (c)?

   (e) What will be the long run equilibrium price

3. Consider a product sold in a perfectly competitive market. There are 40 consumers, each with an identical individual demand given by

$$q^d = 11.25 - 0.5P.$$

The market supply curve is given by

$$Q^s = 270 + 10P.$$

Each firm in the market has a total cost function given by

$$TC = 4/3q^3 + 8q^2 + 13q + 5.$$

(a) Find the equilibrium price and quantity in this market.

(b) Find the supply curve of a typical firm.

(c) Find the production plan of a typical firm. What is the associated profit?

(d) Find the number of firms in this market and the market share of each one.

4. Consider two firms in a perfectly competitive market: Their total cost curves are

$$TC^A = 15q - 6q^2 + q^3$$

and

$$TC^B = 4q - 3q^2 + q^3.$$

(a) Find the long run supply curves of these firms.

(b) Comment on the possibility of staying in the market for each of these firms, taking into account their cost structures.

5. True or false: If in a perfectly competitive market, the economic profit drops to zero, a firm has no incentive to produce.

6. The exhibit below shows the annual income statement of Joe's Clothing Store. Joe worked full time in the store and invested $30,000 to buy the store and stock it with merchandise. He recently turned down an offer of a salaried position paying $10,000 per year to manage another store. He didnt pay himself a salary during the year.

Revenues	Costs
Sales $57000	
	Wholesale clothing $30,000
	Equipment $2,000
	Labor $15,000
	Utilities $1,000
TR $57000	TC $4800

(a) According to the table, what is Joe's explicit cost? Accounting profit?

(b) What major items did he exclude from his costs from an economic standpoint? Hint: opportunity cost

(c) Suppose Joe could have earned 10% interest if he, instead of buying the store and merchandise, invested the $30,000 in the bank. How much interest is he losing per year by keeping the money invested in the store?

(d) In light of your answers to (b) and (c), calculate Joe's opportunity cost and economic profit or loss.