

KEY

ECO 401-002, 003
Problem Set #6
Spring 2013

1. Describe the characteristics of each of the following industries. Explain how you would categorize each market, i.e. perfect competition, monopolistic competition, oligopoly, monopoly.

4 pts.

- a) Fast food restaurants
- b) Mutual funds
- c) Personal computer operating systems
- d) Automobile manufacturing

2. Assume that a competitive firm has the short-run costs depicted in Table 8.1 in your text. What will the firm's most profitable output be and what will profits be if market price is (a) \$15? (b) \$26? (c) \$40? Illustrate your answers by drawing the AVC, ATC, and MC curves in a diagram.

4 pts.

3. Knowing that you have become an expert on the functioning of perfectly competitive markets as a result of taking intermediate microeconomics, over summer break your parents ask you to explain something to them. They grow soybeans on the family farm. They have just learned of the development of a new drought-resistant and insect-resistant seed that will reduce the cost of growing soybeans. In trying to decide whether they can afford to send you back to college in the fall, they need to know what is going to happen in the soybean industry as a result of this cost-reducing technological advancement. What do you tell them? Explain (using words and diagrams) what will happen in the short run and in the long run.

4 pts.

4. "Life is good for pecan growers" (*WSJ*, 4/18/11). Chinese consumers have discovered the joy of eating pecans, causing the price of pecans in the shell to increase from \$1 to \$2 per pound between 2007 and 2010. The amount of pecans harvested in the U.S. grew from 280 million pounds to 300 million pounds as a result. Assume that the industry was in long-run equilibrium in 2007. Also assume that a typical pecan grower was producing 500,000 pounds of pecans per year under those market conditions.

6 pts.

- a) Illustrate the initial 2007 long-run equilibrium in the pecan market. Label both the market outcome and the firm's output choice with (a).
- b) Show the 2010 market outcome and label it (b). What happens to a typical pecan grower's output and profits? Label with (b).
- c) Given that it takes over a decade for a newly planted pecan tree to start bearing nuts, explain what you think will happen in this market over time. Illustrate what you think the market will look like in 2025 and label (c).

18 pts.
total

1. (a) fast-food restaurants -

- large number of small independent sellers
- differentiated product
- insignificant barriers to entry

∴ monopolistic competition

(b) mutual funds -

- large number of mutual funds, each relatively small compared to the market
- homogeneous product
- no significant entry barriers

∴ perfect competition

(c) PC operating systems

- small number of sellers, with one 800-lb gorilla - Microsoft
- differentiated product
- significant barriers to entry

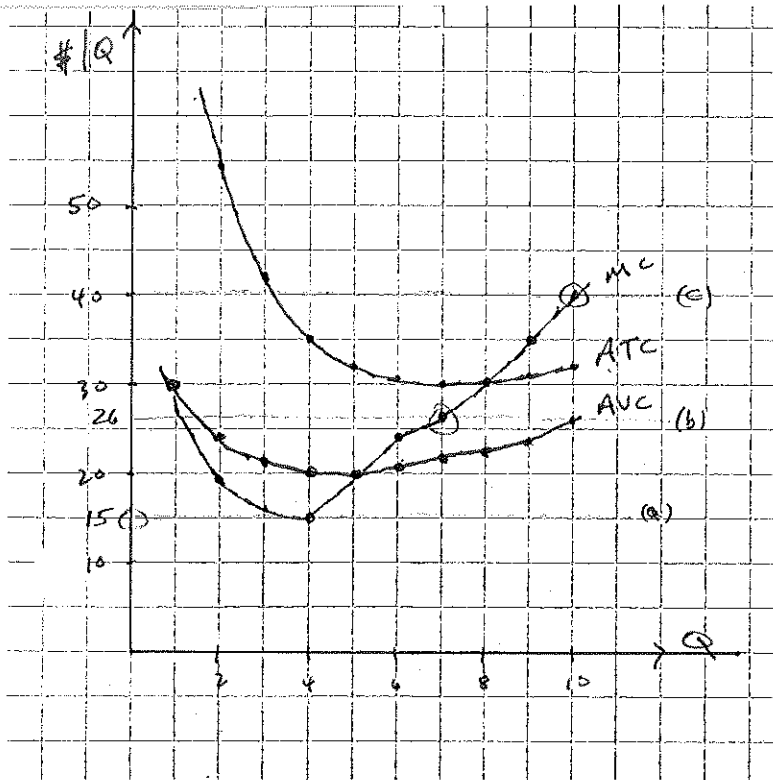
∴ oligopoly

(d) auto manufacturing -

- small number of sellers, identifiable rivals
- differentiated product
- significant entry barriers

∴ oligopoly

2.



(a) $P = \$15$. since $P < \min AVC$,
then shut down. $Q = 0$, $\pi = -\$60$

(b) $P = \$26$. since $P > AVC$, produce
9 where $MR = MC$. $Q = 7$, $\pi = -\$28$

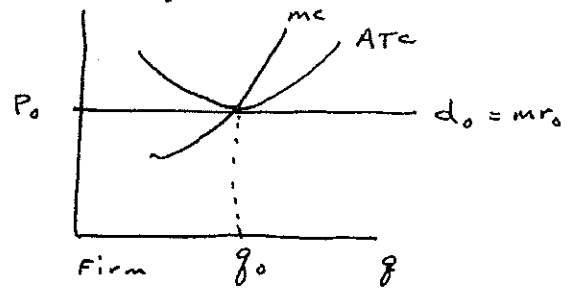
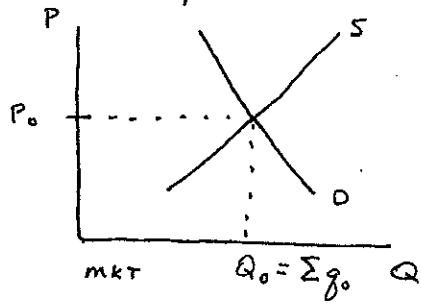
(c) $P = \$40$. $MR = MC$ at $Q = 10$, $\pi = \$85$

Short-Run Costs (\$) for a Hypothetical Firm

Output	Total Fixed Cost	Total Variable Cost	Total Cost	Marginal Cost	Average Fixed Cost	Average Variable Cost	Average Total Cost
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0	60.00	0	60.00	—	—	—	—
1	60.00	30.00	90.00	30.00	60.00	30.00	90.00
2	60.00	49.00	109.00	19.00	30.00	24.50	54.50
3	60.00	65.00	125.00	16.00	20.00	21.67	41.67
4	60.00	80.00	140.00	15.00	15.00	20.00	35.00
5	60.00	100.00	160.00	20.00	12.00	20.00	32.00
6	60.00	124.00	184.00	24.00	10.00	20.67	30.67
7	60.00	150.00	210.00	26.00	8.57	21.43	30.00
8	60.00	180.00	240.00	30.00	7.50	22.50	30.00
9	60.00	215.00	275.00	35.00	6.67	23.89	30.56
10	60.00	255.00	315.00	40.00	6.00	25.50	31.50

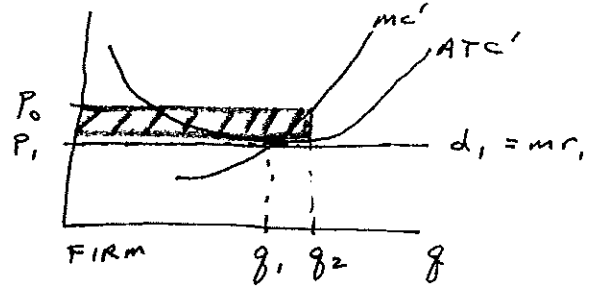
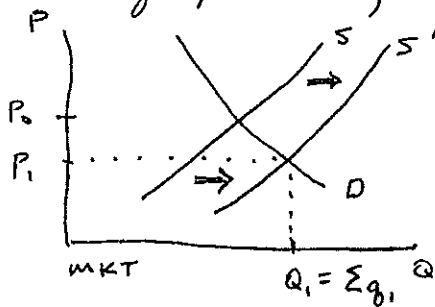
3.

Industry is currently in LR equilibrium:



current soybean farmers are earning a normal return — zero economic profit.

If an improvement in technology causes the cost of producing soybeans to fall:

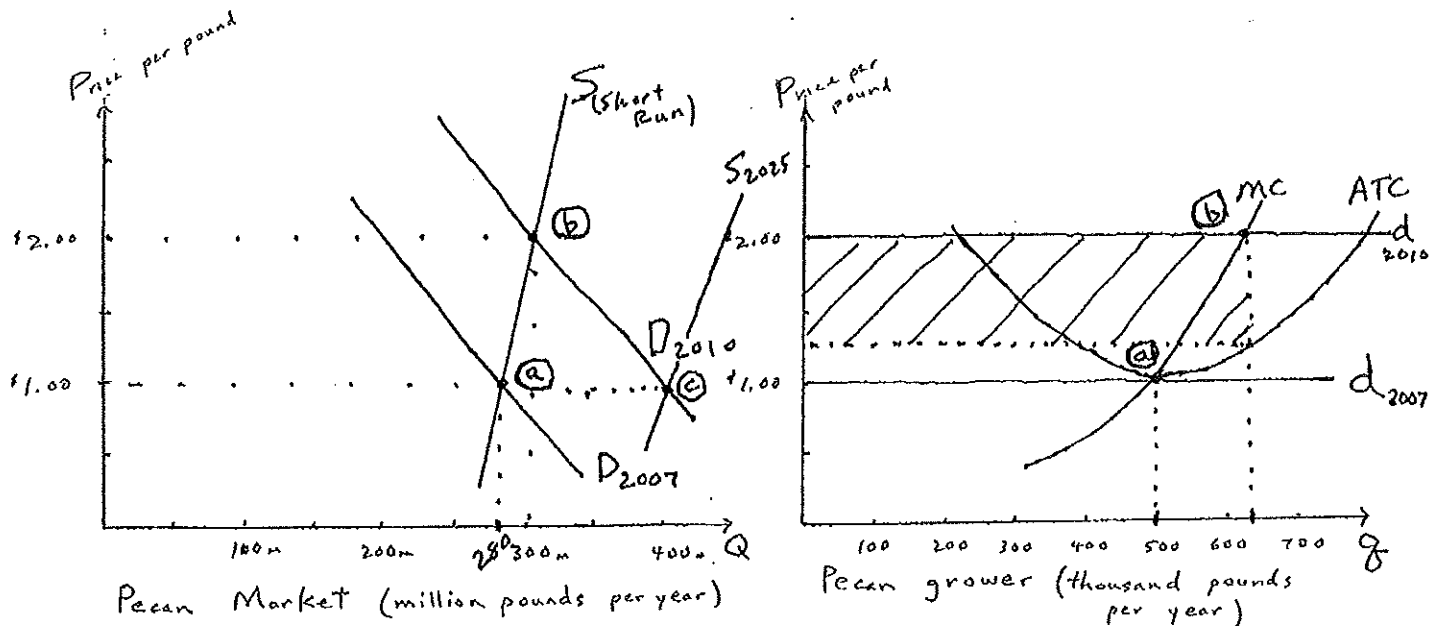


Existing soybean producers will earn positive economic profits in the short run after they adopt the new cost-reducing technology. Economic profits will attract new firms into the industry, causing the market supply curve to shift to the right and price to fall. Long-run equilibrium is restored when price falls to P_1 , and economic profits are zero.

4.

(a) $P = \$1$, $Q = 280m$ in 2007

firm produces $q = 500,000$ and earns zero economic profit



(b) Increase in market demand pushes price up to \$2. Equilibrium quantity increases to 300m, indicating very inelastic short-run supply curve for pecans. Firm increases output to point where $P = MC$, and earns positive economic profit equal to \square .

(c) Pecan trees planted now will shift the market supply curve for pecans in ten years. Eventually we predict that entry of new firms and expansion by existing firms will ~~shift~~ shift market supply enough so that price returns to the \$1 per pound range.