Student Performance Q&A:

2001 AP® Microeconomics Free-Response Questions

The following comments are provided by the Chief Faculty Consultant regarding the 2001 free-response questions for AP Microeconomics. *They are intended to assist AP workshop consultants as they develop training sessions to help teachers better prepare their students for the AP Exams*. They give an overview of each question and its performance, including typical student errors. General comments regarding the skills and content that students frequently have the most problems with are included. Some suggestions for improving student performance in these areas are also included. Consultants are encouraged to use their expertise to create strategies for teachers to improve student performance in specific areas.

Question 1

What was intended by the question?

This long question tested the student's understanding of the competitive market and the behavior of the representative firm. In part (a), students should respond that the firm has a perfectly elastic (or horizontal) marginal revenue curve that is equal to the market price. The firm produces the output level where marginal revenue (and price) equals marginal cost. The economic profit of the firm is the area bounded by the quantity produced multiplied by the difference between price and average total cost (P-ATC) at that output level.

With economic profits, new firms will enter the industry. The market supply will shift outward with the entry of firms, and market price will fall. The process continues until a long-run equilibrium is established. At this equilibrium, the market price is equal to the minimum of the long-run average cost of the typical firm. Each firm produces where MR=MC, which is the level of output that corresponds to the minimum of the long-run average cost. The firm makes zero economic profits.

A price control below the long-run equilibrium price but above the firm's average variable cost will result in short-run production. Since the price has fallen, the firm's marginal revenue falls. The firm's output level, where MR=MC, will also decrease. Because the firm is producing less output, total cost falls. Since both the firm's price and quantity have fallen, total revenue falls.

How well did the students perform? What were the common errors or omissions?

Frequently students were unable to draw "side-by-side" graphs showing the industry (or market) and the representative firm. Also, students had trouble identifying precisely the area of economic profits. They frequently realized that price and average cost were related to the answer, but could not clearly structure the area (or rectangle) of economic profits (P-ATC) x Q. Students, while often realizing that the long-run equilibrium price would equal the firm's long-run average total cost, did not always know that the price to average cost equality would be at the minimum of the firm's long-run average cost curve.

Question 2

What was intended by the question?

This question tested the student's understanding of a negative externality. The student was asked to show that the supply curve that incorporated all costs, both private and social, would lie above the supply curve with only private costs. The student should show a market supply curve that includes only private costs of production. For a given market demand curve, there will be an equilibrium price and quantity of output. There should be a second supply curve that incorporates all costs of production, including the external costs. The socially optimum level of output is found at the intersection of the market demand and the supply curve that incorporates all costs, both private and external. With the same market demand curve, at the social optimum, the equilibrium price should be higher and the equilibrium quantity lower. In essence, the unregulated private market will produce too much output at too low a unit price.

To achieve the socially optimum level of output, the government could introduce a unit tax on output. If properly chosen, this tax could raise the supply curve with only private costs to intersect at the socially optimum output level. Alternatively, quantity controls or pollution permits could be used to correct the overproduction.

How well did the students perform? What were the common errors or omissions?

Too frequently students lost a point because, while showing two supply curves, they did not explain that one contained only private costs and the other included all costs, including social costs.

Question 3

What was intended by the question?

This question tested the student's knowledge of the production function and of diminishing returns. The correct answer should show that worker number 3 has the highest marginal product (i.e., 60-35 = 25 cars washed). With additional workers the marginal product falls. This is consistent with the Law of Diminishing Returns. That law states that as more units of a variable input (labor) are employed with a fixed input, output will eventually increase at a decreasing rate. The sixth worker would never be hired since the marginal product of that worker is negative (80-85= -5 cars). A firm would never hire a unit of an input that reduces total output. The firm would be willing to pay the fourth worker as much as its marginal revenue product or $90 per day, found by multiplying the price of a car wash by the number of cars washed by the fourth worker (i.e., $6 x 15 = $90).

The question calls for the student to give a definition of the law of diminishing returns. Frequently, students neglected to mention that the law of diminishing returns applies in the short run when there are both a variable input and a fixed input.

How can teachers improve student performance on the exam?

I urge you to emphasize to students the importance of correctly and fully labeled graphs. Increasingly students are losing points when readers are not able to discern the student's intent with graphs that are required for an answer. I hope this commentary is helpful to you as you prepare students for the free-response section of the 2002 AP Microeconomics Exam.