Principles of Microeconomics

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On January 31, 1990, the first McDonald's opened in Moscow, capital of the then Soviet Union. Economists often described the Soviet Union as a "permanent shortage economy," where the government kept prices permanently low in order to appear "fair." "An American journalist on the scene reported the customers seemed most amazed at the 'simple sight of polite shop workers . . . in this nation of commercial boorishness.' "

a Why were most Soviet shop workers "boorish" while the McDonald's workers in Moscow were "polite"?

b What does your answer to the previous question tell you about the power of economic incentives to change human behavior? In other words, how entrenched is "culture"?

... Let's think about whether it's a good idea to allow this black market to exist.

a Harry is lucky enough to get a rent-controlled apartment for $300 per month. The market rent on such an apartment is $3,000 per month. Harry himself values the apartment at $2,000 per month, and he'd be quite happy with a regular, $2,000 per month New York apartment. If he stays in the apartment, how much consumer surplus does he enjoy?

b If he illegally subleases his apartment to Sally on the black market for $2,500 per month and instead rents a $2,000 apartment, is he better off or worse off than if he obeyed the law?

Let's measure consumer surplus if the government imposes price controls and goods end up being randomly allocated among those consumers willing to pay the controlled price. If the demand and supply curves are as in the figure below, then:

- What is consumer surplus under the price control with random allocation of the good?
- What would consumer surplus be if the quantity supplied were 1,000 but the goods were allocated to the highest value users?

In the competitive electrical motor industry, the workers at Galt Inc. threaten to go on strike. To avoid the strike, Galt Inc. agrees to pay its workers more. At all other factories, the wage remains the same.

a What does this do to the marginal cost curve at Galt Inc.? Does it rise, does it fall, or is there no change? Illustrate your answer in the figure below.

b What will happen to the number of motors produced by Galt Inc.? Indicate the "before" and "after" levels of output on the x-axis in the figure.

c In this competitive market, what will the Galt Inc. labor agreement do to the price of motors?

d Surely, more workers will want to work at Galt Inc. now that it pays higher wages. Will more workers actually work at Galt Inc. after the labor agreement is struck? Why or why not?

The Role of the Firm

- In the supply process, people offer their factors of production, such as land, labor, and capital, to the market
- Firms transform the factors into goods for consumers
- Production is the transformation of factors into goods
- Ultimately, all supply comes from individuals because they control the factors of production
- A firm is an economic institution that transforms factors of production into goods and services
  Firms
  1. Organize factors of production and/or
  2. Produce goods and services and/or
  3. Sell produced goods and services

Firms Maximize Profit

- The goal of a firm is to maximize profits
  Profit = total revenue - total cost
- For economists, total cost is explicit payments to the factors of production plus the opportunity cost of the factors provided by the owners of the firm
- For economists, total revenue is the amount a firm receives for selling its product or service plus any increase in the value of the assets owned by the firm
- Economists and accountants measure profit differently
- Accountants focus on explicit costs and revenues
  Accounting profit = explicit revenue - explicit cost
- Economists focus on both explicit and implicit costs and revenue

  Economic profit = (explicit and implicit revenue) - (explicit and implicit cost)

From a firm's perspective, what is the difference between the short and the long run?

The Production Process

- The production process can be divided into the long run and the short run

Short run

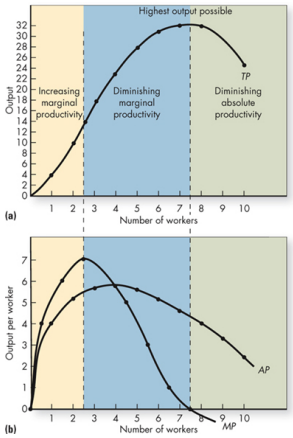
- A firm is constrained in regard to what production decisions it can make
- Some inputs are fixed

Long run

- A firm chooses from all possible production techniques
- All inputs are variable

- The terms long run and short run do not necessarily refer to specific periods of time, but to the flexibility the firm has in changing the level of output

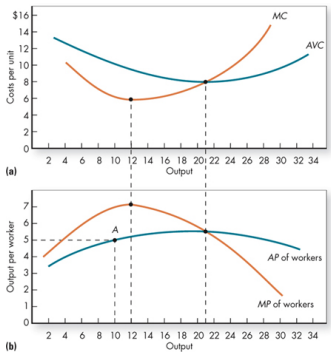
Production Function, Marginal, and Average Productivity



Law of diminishing marginal productivity

states as more of a variable input is added to an existing fixed input, after some point the additional output from the additional input will fall

The Shapes of (Short-Run) Cost Curves



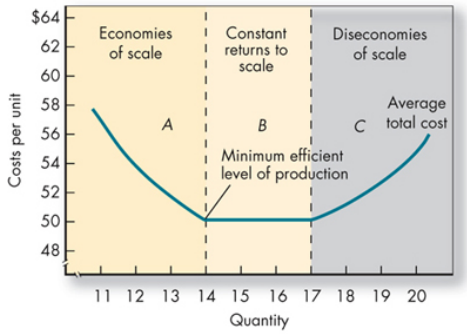
- The U-shape of ATC and AVC curves is due to:
  - When output is increased in the short run, it can only be done by increasing the variable input
  - The law of diminishing productivity causes marginal and average productivities to fall
  - As average and marginal productivities fall, average and marginal costs rise
- The marginal cost curve goes through the minimum points of the ATC and AVC curves

Making Long-Run Production Decisions

- Firms have more options in the long run and they can change any input they want
- Neither plant size or technology available is given
- Firms look at costs of various inputs and the technologies available for combining these inputs
- They choose the combination that offers the lowest cost

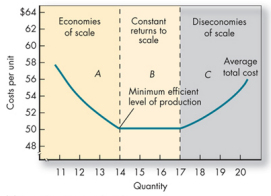
Determinants of the Shape of the Long-Run Cost Curve

- The law of diminishing marginal productivity does not apply in the long run
- All inputs are variable in the long run
- The shape of the long-run cost curve is due to the existence of economies and diseconomies of scale



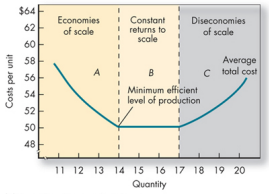
(b) Long-Run Average Cost Curve

Economies of Scale


(b) Long-Run Average Cost Curve

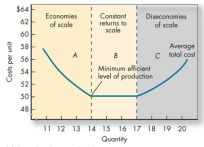
- Production exhibits **economies of scale** when long-run average total costs decrease as output increases
  - These are shown by the downward sloping portion of the long-run average total cost curve
- An indivisible setup cost is the cost of an indivisible input for which a certain minimum amount of production must be undertaken before the input becomes economically feasible to use
  - The cost of a blast furnace or an oil refinery is an example of an indivisible setup cost
  - Indivisible setup costs create many real-world economies of scale

Minimum Efficient Level of Production


(b) Long-Run Average Cost Curve

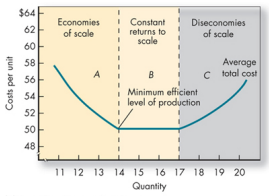
- Because of the importance of economies of scale, business people often talk about the minimum efficient level of production
- The **minimum efficient level of production** is the amount of production that spreads setup costs out sufficiently for firms to undertake production profitably
- The minimum efficient level of production is reached once the size of the market expands to a size large enough for firms to take advantage of all economies of scale

Diseconomies of Scale


(b) Long-Run Average Cost Curve

- Production exhibits **diseconomies of scale** when long-run average total costs increase as output increases
- These are shown by the upward sloping portion of the long-run average total cost curve
- Diseconomies of scale usually, but not always, start occurring as firms get large
- Two reasons for diseconomies of scale are, e.g.:
  1. Increased monitoring costs (the costs incurred by the organizer of production in seeing to it that the employees do what they're supposed to do)
  2. Loss of team spirit (the feelings of friendship and being part of a team that bring out people's best efforts)

Constant Returns to Scale


(b) Long-Run Average Cost Curve

- Production exhibits **constant economies of scale** when average total costs do not change as output increases
- Constant returns to scale are shown by the flat portion of the long-run average total cost curve
- Constant returns to scale occur when production techniques can be replicated again and again to increase output
- This occurs before monitoring costs rise and team spirit is lost

A Perfectly Competitive Market

What conditions must hold for a market to be perfectly competitive?

A Perfectly Competitive Market

- For a market to be perfectly competitive, six conditions must be met:
  1. Both buyers and sellers are price takers – a price taker is a firm or individual who takes the price determined by market supply and demand as given
  2. The number of firms is large – any one firm's output compared to the market output is imperceptible and what one firm does has no influence on other firms
  3. There are no barriers to entry – barriers to entry are social, political, or economic impediments that prevent firms from entering a market
  4. Firms' products are identical – this requirement means that each firm's output is indistinguishable from any other firm's output
  5. There is complete information – all consumers know all about the market such as prices, products, and available technology
  6. Selling firms are profit-maximizing entrepreneurial firms – firms must seek maximum profit and only profit

Do you remember our market experiment?

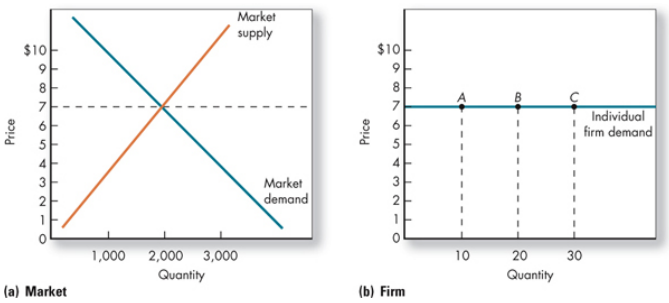
I used the theory of perfectly competitive markets to predict the outcome of the experiment.

- There were
  - no barriers for entry and exit
  - identical products
- And everybody was supposed to maximize their profits

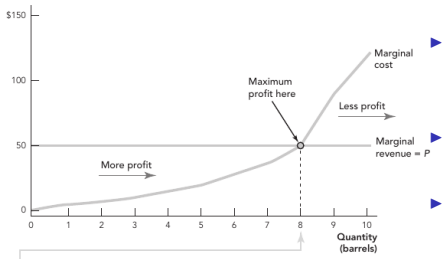
  HOWEVER...
- You negotiated prices and were not price takers
- There were just 25 market participants in total – hardly a large number, far from infinite
- You did not know all the producers' costs nor the buyers' willingness to pay – that is hardly complete information

Still, my prediction was pretty close to what happened in the experiment...

Demand Curve for the Firm and for the Industry



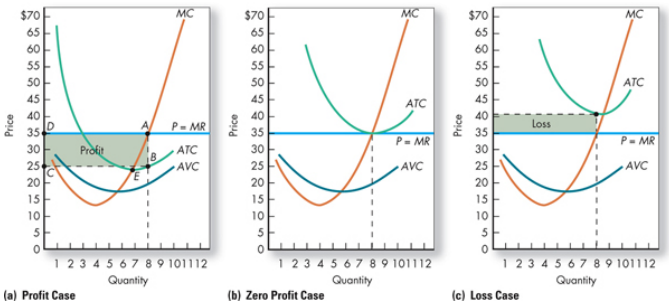
Marginal Cost, Marginal Revenue, and Price Graph



Barrels of Oil Produced	Total Revenue (TR) (P × Q)	Total Cost (TC)	Profit TR – TC	Marginal Revenue ΔTR/ΔQ = Price	Marginal Cost ΔTC/ΔQ	Change in Profit
0	0	30	–30			
1	50	34	16	50	4	46
2	100	40	60	50	6	44
3	150	51	99	50	11	39
4	200	68	132	50	17	33
5	250	91	159	50	23	27
6	300	120	180	50	29	21
7	350	156	194	50	36	14
8 ← Maximum Profit Here	400	206	194	50	50	0
9	450	296	154	50	90	–40
10	500	420	80	50	124	–74

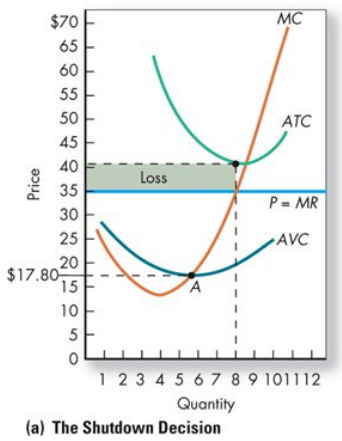
- For a firm in a competitive market, $MR = P$
- A firm maximizes total profit, not profit per unit
- If $MR > MC$, a firm can increase profit by increasing output
- If $MR < MC$, a firm can increase profit by decreasing its output
- The profit-maximizing condition of a competitive firm is: MR = MC

Profits



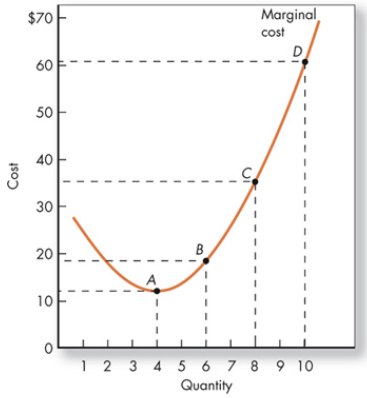
- Find the output where $MC = MR$, this is the profit maximizing quantity Q
- Find profit per unit where the profit maximising Q intersects ATC

The Shutdown Decision



- The shutdown point is the point below which the firm will be better off if it shuts down than it will if it stays in business
- If $P > \min AVC$, then the firm will still produce, but earn a loss
- If $P < \min AVC$, then the firm shuts down

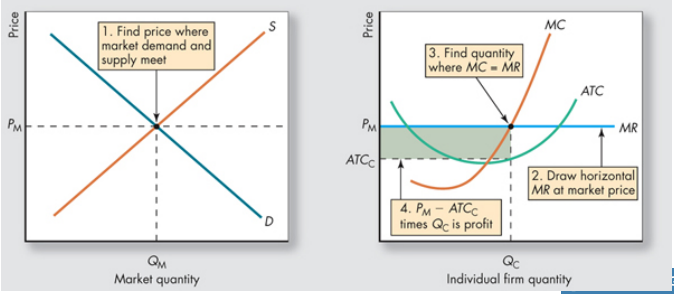
Marginal Cost is the Supply Curve



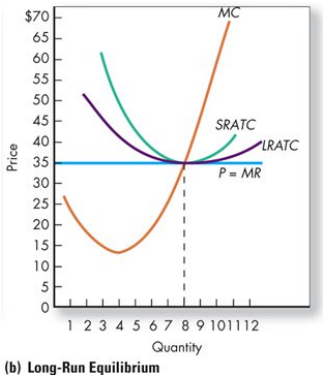
Because the marginal cost curve tells us how much of a good a firm will supply at a given price, **the marginal cost curve above the point of minimum average cost is the firm's supply curve**

Short-Run Market Supply and Demand

- While the firm's demand curve is perfectly elastic, the industry's demand curve is downward sloping
- The market (industry) supply curve is the horizontal sum of all the firms' marginal cost curves
- The market supply curve takes into account any changes in input prices that might occur



Long-Run Competitive Equilibrium



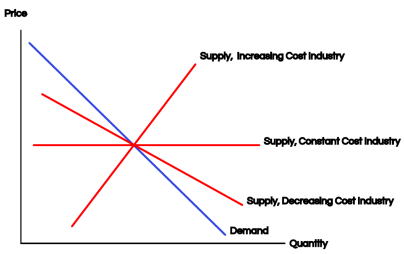
(b) Long-Run Equilibrium

- At long run equilibrium, economic profits are zero
- Profits create incentives for new firms to enter, market supply will increase, and the price will fall until zero profits are made
- The existence of losses will cause firms to leave the industry, market supply will decrease, and the price will increase until losses are zero
- Zero profit does not mean that the entrepreneur does not get anything for his efforts
  - Normal profit is the amount the owners would have received in their next best alternative
  - Economic profits are profits above normal profits

Long-Run Market Supply

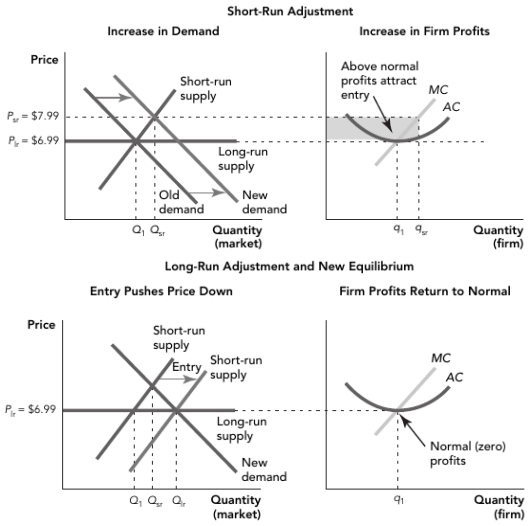
Is the market supply curve always upward-sloping? Why?

Long-Run Market Supply



- If the long-run industry supply curve is perfectly elastic, the market is a constant-cost industry
- If the long-run industry supply curve is upward sloping, the market is an increasing-cost industry
- If the long-run industry supply curve is downward sloping, the market is a decreasing-cost industry

Market Response to an Increase in Demand



In the short run, the price does more of the adjusting, and in the long run, more of the adjustment is done by quantity

In the competitive electrical motor industry, the workers at Galt Inc. threaten to go on strike. To avoid the strike, Galt Inc. agrees to pay its workers more. At all other factories, the wage remains the same.

a What does this do to the marginal cost curve at Galt Inc.? Does it rise, does it fall, or is there no change? Illustrate your answer in the figure below.

b What will happen to the number of motors produced by Galt Inc.? Indicate the "before" and "after" levels of output on the x-axis in the figure.

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