

Lesson 8 - Pure Competition

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Section 1 - Market Structures

Market Structures Characteristics

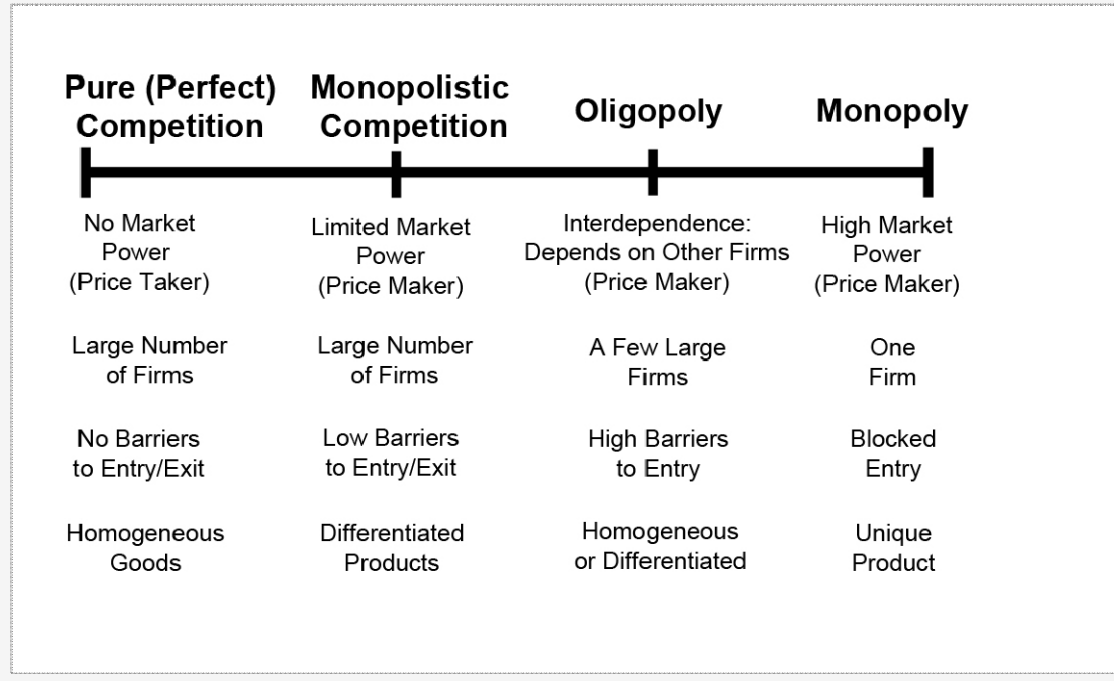
Think of the different products or services that are purchased. If you asked someone what brand of cars or shoes they purchase, it is likely that they could tell you the brand name. But if you asked them what brand of flour, milk, or eggs they purchase, the answer might be, I don't know, I just buy whatever is cheapest. How consumers view a particular product or service influences the market power and behavior of a business or producer.

In the next few sections we will discuss four different **market structures** and their behavior. You can think of businesses being on a continuum with one extreme being perfect competition to the other extreme being monopolies. While few businesses are actually at either extreme, it is useful to look at the two extremes for comparison purposes. In between the two extremes are most businesses, which fall into the categories of monopolistic competition and oligopolies. When examining the structure of a market, we focus on the differentiating characteristics: number of firms, type of product, ease of entry, and market power or price control. These characteristics are summarized in the graphic below.

Market Structure and Characteristics

The graphic below shows the continuum of market structures, and characteristics that define the market. There are four main characteristics that distinguish the market structures from each other: Market power/price control, number of firms, barriers to entry/exit, and the types of products sold.

The first set of characteristics is market power/price control. Do firms in the market set the price, or do they take the price that is determined in the whole market? The next characteristic is the number of firms in the market. Below that is whether or not there are barriers that prevent firms from entering/exiting the market. The final row shows the types of goods firms sell in the respective market structure.



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Pure or Perfect Competition

In the **perfect** or **pure competition** market, there are a large number of firms each producing the same product (as called a standardized or homogeneous product). Since the number of firms is very large, no one firm can influence the market price, thus each firm has no market power and each is a price taker. We also assume that there is perfect information, meaning everyone knows what price is being charged in all markets. The barriers to entry are low, so it is easy for other firms to get into or out of the market. On the other end, a monopoly has only one firm and produces a unique product that has no close substitutes. Entry into the industry is blocked which allows the firm significant price control and market power.

Characteristics of Pure or Perfect Competition

The graphic below shows the characteristics of a pure or perfectly competitive market.

Pure or Perfect Competition

No Market Power - Price Taker

Large Number of Firms

Easy Entry and Exit -
Low or No Barriers to Entry

Homogeneous Product

Perfect Information

Examples: Agriculture -
Wheat Farmers, Corn Farmers,
etc.



Coded by David Barrus.

Monopoly


On the other end, a **monopoly** has only one firm and produces a unique product that has no close substitutes. Entry into the industry is blocked which allows the firm significant price control and market power.

Characteristics of a Monopoly

The graphic below shows the characteristics of a monopoly

Monopoly

- Market Power - Price Maker
- One Firm
- High Barriers to Entry/
Blocked Entry
- Unique Product
- Examples: Local Utilities



Coded by David Barrus.

Monopolistic Competition

There are a large number of firms with lower barriers to entry in **monopolistic competition**. The products they produce are unique to the firm but very similar to those produced by other firms. For example, only one firm produces the Big Mac or the Whopper but there are many products similar to each. Since the barriers to entry are low and the products each firm produces are similar, firms have a limited degree of market power.

Characteristics of Monopolistic Competition

The graphic below shows the characteristics of monopolistic competition.

Monopolistic Competition

- Market Power - Limited
- Large Number of Firms
- Low Barriers to Entry
- Differentiated Products
- Examples: Restaurants,
Hotels, etc.



Coded by David Barrus.

Oligopoly



Oligopolies have a few large firms and may produce either a standardized product, such as steel, or a **differentiated** product, such as automobiles. There are significant barriers to entry which limit the number of firms that can enter the market often due to the cost structure of the industry. Since there are only a few firms, the market power of a firm depends on the actions of the other firms in the industry.

Although each firm does not ideally fit in one of the four market structures, all firms can be placed along this continuum based on their characteristics. Given the characteristics of the industry, we will study how firms in that industry behave.

Characteristics of an Oligopoly +

The graphic below shows the characteristics an oligopoly.

Oligopoly

<p>Market Power - Interdependent</p> <p>A Few Large Firms</p> <p>Significant Barriers to Entry</p> <p>Homogeneous or Differentiated Products</p> <p>Examples: Steel, Oil, Automobiles, etc.</p>	 
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Coded by David Barrus.

Although each firm does not ideally fit in one of the four market structures, all firms can be placed along this continuum based on their characteristics. Given the characteristics of the industry, we will study how firms in that industry behave.

Ponder and Prove - Section 1 - Market Structures

Section 1 Questions +

Instructions: Click on the button that represents the correct answer. After you select an answer, click on the 'Grade My Answer' button.

Question 1 Question 2 Question 3 Question 4

A unique characteristic of pure (perfect) competition is:

- Interdependence
- No Market Power
- Unique Products
- Few firms

Grade My Answer Reset

"Results"

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Section 2 - Pure (Perfect) Competition in the Short-run

Pure (Perfect) Competition

Characteristics of Pure or Perfect Competition +

The graphic below shows the characteristics of a pure or perfectly competitive market.

Pure or Perfect Competition

No Market Power - Price Taker


Large Number of Firms

Easy Entry and Exit -
Low or No Barriers to Entry

Homogeneous Product

Perfect Information

Examples: Agriculture -
Wheat Farmers, Corn Farmers,
etc.



Coded by David Barrus

How do firms in pure competition behave in the short run when at least one of their inputs is fixed? Agriculture commodities are our closest example to a purely competitive market. Commodities such as wheat, corn, milk, and eggs from one farm are viewed by consumers to be same as those same commodities from other farms. If the grade A large eggs from company X tastes just like the grade A large eggs from company Y then the consumer will purchase whichever one is cheapest.

In pure competition there are a large number of firms such that no one firm can influence the price. To help put this in perspective, let's look at wheat farming. According to the 2007 Census of Agriculture, nationally the average farm size of all types of farms is 418 acres. So a farm that had several thousand acres of wheat would be considered a large farm. However, given that there is approximately 60 million wheat acres planted domestically each year, even a farm of 10,000 acres would only represent .016 percent of the total, which would not be enough to influence the market price.

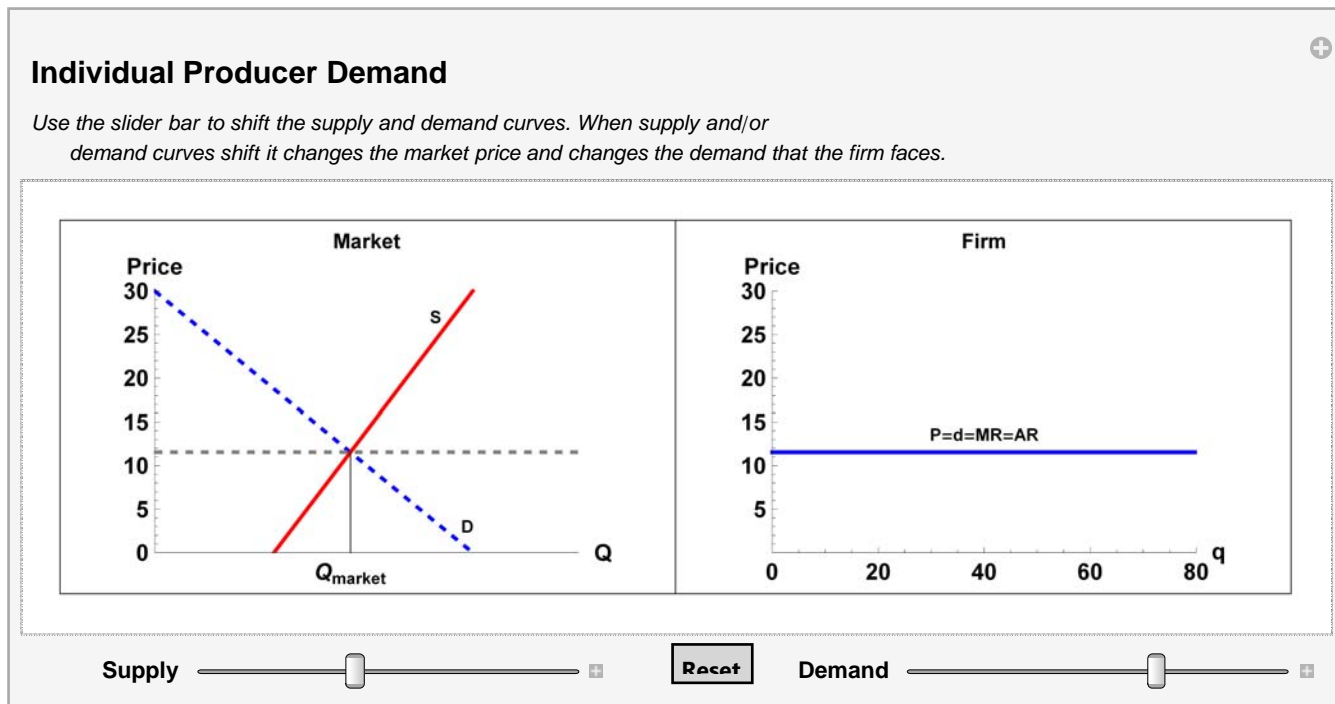
(References: <http://www.ers.usda.gov/StateFacts/US.htm>; <http://www.ers.usda.gov/briefing/Wheat/2005baseline.htm>; <http://www.msu.edu/user/hilker/outlook.htm#wheat>)

Individual Producer Demand

Since each producer makes up a very small portion of the total market, no one producer can influence the price. The demand curve faced by each producer is completely elastic (horizontal). Producers are said to be **price takers**. An individual producer can sell as much as he has the ability to produce at the going market price, but if he tries to raise

his price, even slightly, demand goes to zero. Consumers view each bushel of wheat as being the same as the next, so their only concern is the price. The graph on the right in the graphic below illustrates the firm demand curve.

In an efficient market where all goods are identical, the **law of one price** would indicate there should be one price for the commodity if transaction costs were zero. In other words, if a commodity such as wheat could be moved for no cost from one place to another, we would expect there to be one overall price emerge. Since transactions costs are positive, the difference that we would expect to see in the price of commodity would be based on the supply and demand of the commodity in each area and the cost of shipping the commodity. In perfect competition, we assume there is **perfect information**, in other words, we know exactly what price wheat is being sold for everywhere. If wheat is selling for a higher price in a neighboring town such that a farmer could increase his profits by taking his wheat there, the supply of wheat in that town would increase lowering the price and the price of wheat in the farmer's town would increase driving the price to be same in the two towns except for the transaction costs.



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Why do we see industries that produce a commodity advertise but we typically don't see individual firms advertise? Producers are able to sell all the product they can produce at the going market price and have no ability to raise price through advertising, thus they have no incentive to incur the cost of advertising. However, the price that the individual producer receives is based on the equilibrium market price which does have a downward sloping demand curve. Successful advertising as an industry shifts the market demand curve to the right, leading to a higher price for each individual producer. Thus there is a benefit from advertising collectively but not individually. There is an incentive for individual producers to be free riders, allowing others to pay for the cost of advertising while all reap the benefits. To avoid this problem, most marketing takes place through associations or marketing boards that force all producers to contribute to the marketing fund. For example, a certain amount is charged for every hundred pounds of milk sold to pay for advertising milk. Other examples of industry advertising include the beef, pork and egg industries.

Since producers have no control over the price of the good, their only decisions are to determine if they should produce and if so, how much. With the goal of maximizing profits, firms in pure competition must evaluate both the price they can sell the good for and the respective costs of producing the goods. Changes in the market for the good change the price the firm "takes." Move the sliders in the graphic above to get a sense of how the firm demand changes as market supply and demand shift.

Profit Maximization

Profit Maximization

To maximize profit, a firm needs to produce where the distance between total revenue and total cost are greatest. At this point the slope of the total revenue curve (marginal revenue) and the slope of the total cost curve (marginal cost) are the same. Therefore profit is maximized where marginal revenue (MR) equals marginal cost (MC). For purely competitive firms, marginal revenue is equal to the price that is determined in the market. Therefore, profit is maximized where price equals marginal cost.

Revenue, Costs, and Profits

Total Revenue (TR) = Price * Quantity

Marginal Revenue (MR) = $\Delta TR / \Delta Q$ = Price

Average Revenue (AR) = TR / Q = Price

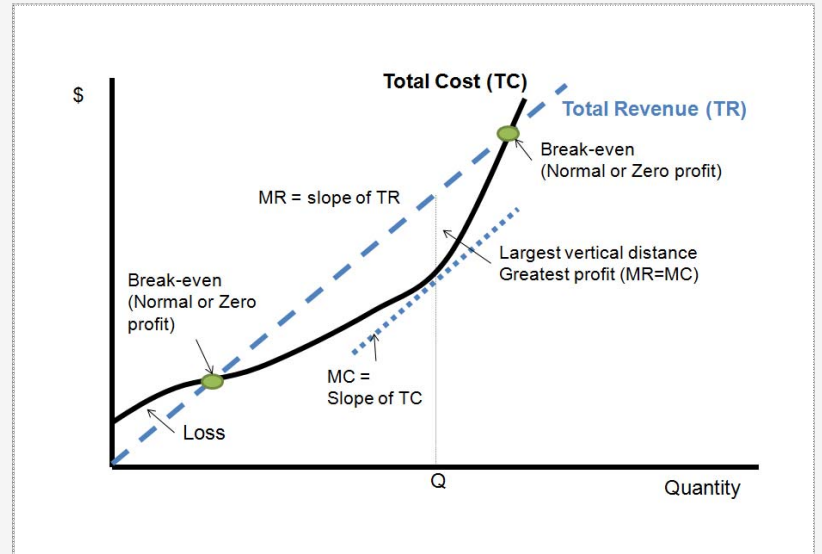
Demand = MR = AR = Price

Total Cost (TC) = ATC * Quantity

Marginal Cost (MC) = $\Delta TC / \Delta Q$

Profit = TR - TC

Profit is maximized when MR = MC



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Profit is equal to total revenue minus total cost, so the **profit maximizing** output level is where there is the greatest vertical distance between total revenue and total cost (see graphic above). At that point, the slope of the total revenue line is the same as the slope of the total cost curve. Note that since the price remains constant at each quantity, the total revenue line is a straight line with a slope that is equal to the price of the good. The slope of the total revenue is the marginal revenue and the slope of the total cost curve is the marginal cost. Since at the profit maximizing quantity the slopes of both curves will be the same, **profits are maximized where marginal revenue equals marginal cost** (see graphic above and the table below).

Determining Profit Maximizing Quantity – Table

The table below illustrates where a purely competitive firm maximizes profit. Since the price is determined in the market, a firm's marginal revenue is the same at every level of output. However, the firm's costs change as more is produced. Profit is maximized where $MR=MC$. In this example, that is where the firm produces 70 units of output. Even though the profits are the same at 60 units of output, the firm always produces where $MR=MC$.

Profit Maximization

$$MR = MC$$

Quantity	ATC	AVC	MC	MR	Profit
0	–	–	–	–	–5.00
10	1.20	0.70	0.70	0.60	–6.00
20	0.85	0.60	0.50	0.60	–5.00
30	0.63	0.47	0.20	0.60	–1.00
40	0.55	0.43	0.30	0.60	2.00
50	0.52	0.42	0.40	0.60	4.00
60	0.52	0.43	0.50	0.60	5.00
70	0.53	0.46	0.60	0.60	5.00
80	0.55	0.49	0.70	0.60	4.00
90	0.60	0.54	1.00	0.60	0.00

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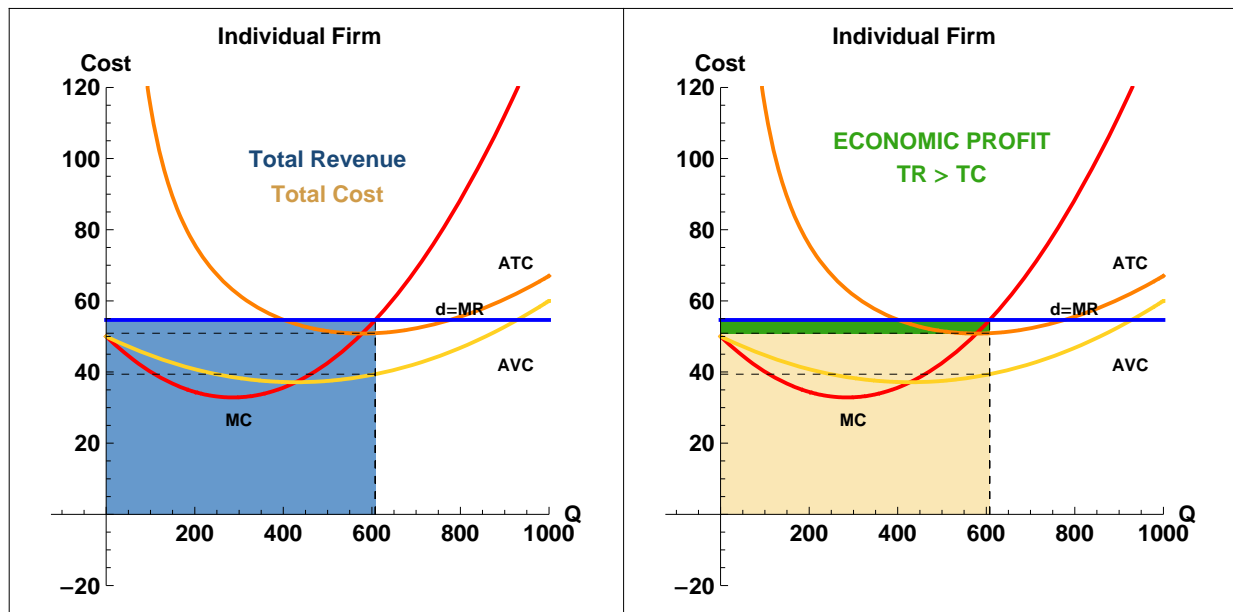
Marginal revenue is the additional revenue generated from selling one more unit of output. The formula is the change in total revenue divided by the change in quantity or output. Total revenue is the price times quantity and since the price is constant for each good sold, the marginal revenue in a purely competitive market is simply the price of the good. Thus in pure competition, the demand is equal to the marginal revenue which is also equal to the average revenue.

A firm will always **maximize profits** or **minimize losses**, if it produces where the marginal revenue equals the marginal cost. A firm evaluates if incurring the additional cost is offset by the additional revenue generated. For example, at 30 units of output is it worth 20 cents more to get 60 cents? Certainly. The firm will continue to increase output up to the point where the marginal cost is equal to the marginal revenue, which in our example occurs at 70 units of output. If we produced 80 units, the marginal cost of 70 cents would be greater than the marginal revenue of 65 cents and profits would decline.

If we go to the exact quantity where marginal revenue equals marginal cost, then for the last unit produced there was no increase in the profits. For example, at 70 units the marginal revenue and marginal cost are 60 cents and the profits of 5 dollars is the same as the profits at 60 units. However, by following the rule of going to the point where marginal revenue equals marginal cost, there will not be another quantity that will yield greater profits.

Pure (Perfect) Competition – Total Revenue and Total Cost

Use the slider bar to shift the curves. The two graphs show the individual firm for a good in a purely competitive market. The graph on the left shows the just the total revenue (blue area) if the firm is running an economic profit or is at zero economic profit. If the firm is running an economic loss, then the total cost shaded area (tan) will appear. On the right graph the total cost area is shown along with the economic profits (green) or economic losses (red). Move the sliders to see how profits change when the market price changes (move supply and/or demand sliders), and the firm's costs change (move the variable and/or fixed cost sliders.)



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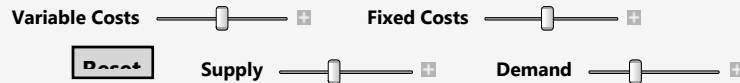
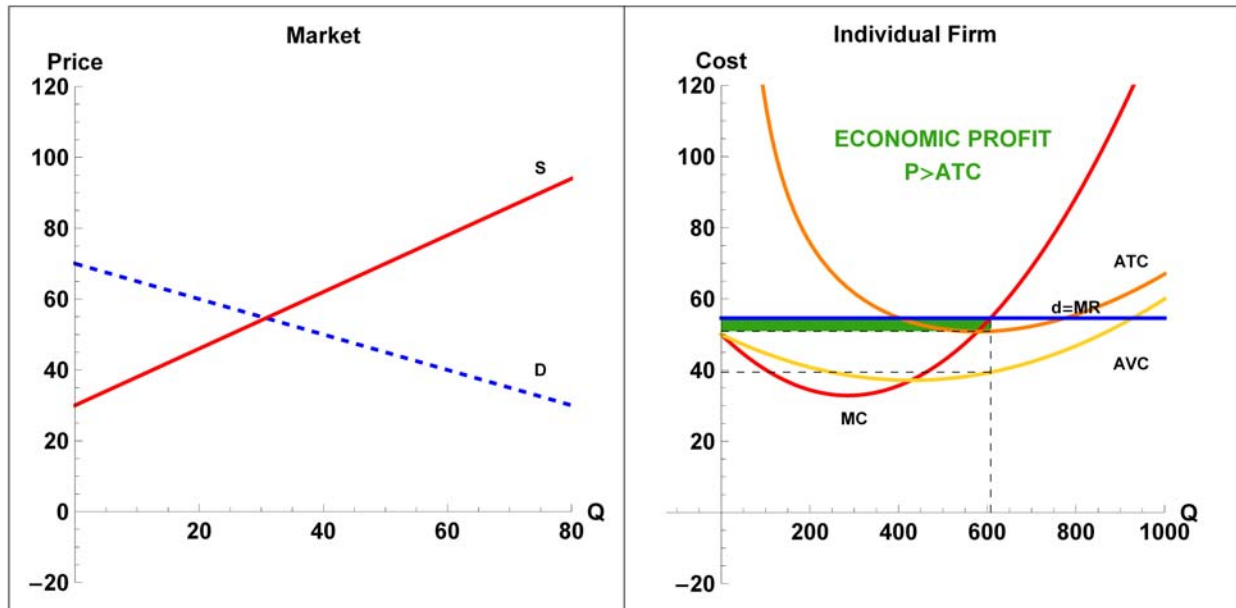
For pure competition, to solve graphically, we combine our costs curves with the demand curve, which is also our marginal revenue curve. Then we find the quantity where marginal revenue equals the marginal cost. The area representing total revenue, which is price times quantity, is shown in the shaded blue box in the left graph.

The total cost can be computed by taking the average total cost at the profit maximizing quantity times the quantity. It is the tan shaded box on both graphs. Profit is total revenue minus total cost and is represented by the green box if there is a positive profit and a red box if there is a negative profit. Move the variable cost, fixed cost, supply, and/or demand sliders to see how price, revenue, and profit change when these factors change.

The graph below shows the market where the price is determined and the costs and demand curve for the firm. It also indicates if the firm is earning a positive economic profit or a negative economic profit (economic loss). Move the sliders to see how changes to costs, supply, and demand impact profits in a perfectly competitive market.

Pure (Perfect) Competition – Profit and Losses in the Short-Run

Use the slider bar to shift the curves. The two graphs show the market for a good in a purely competitive market. (Note: The quantity in the market is in thousands). The graph on the right shows the firm's cost curves and the horizontal demand curve. Move the sliders to see how profits change when the market price changes (move supply and/or demand sliders), and the firm's costs change (move the variable and/or fixed cost sliders.)



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Producing at a Loss

Why do some businesses open at 9 am and close at 5 pm while others stay open till 11 pm, or are open all night? Would it ever be a wise decision for a business to continue to stay open, in the short run, if it is losing money? The answer depends on the firm's fixed costs, the additional revenue it generates by being open another hour, and the additional costs (variable costs) it incurs by being open another hour.

Operating at a Loss or Shutting Down – Table

The table below illustrates where a purely competitive firm trying to maximize profits or in this case trying to minimize losses. Since the price is determined in the market, a firm's marginal revenue is the same at every level of output. In the graph on the left the market price is \$0.45. In the graph on the right the market price is \$0.35. Profit is maximized (losses minimized) where $MR=MC$. However, a firm will shutdown if at the profit maximizing (loss minimizing) quantity AVC is greater than price (MR). In the table on the right this is the case, and the firm should shutdown. However, in the table on the left the AVC is less than the price (MR), so the firm should keep operating. (Note: The row is bolded where profits are maximized (losses minimized).

Operating at a Loss						Shutdown					
Quantity	ATC	AVC	MC	MR	Profit	Quantity	ATC	AVC	MC	MR	Profit
0	–	–	–	–	–5.00	0	–	–	–	–	–5.00
10	1.20	0.70	0.70	0.45	–7.50	10	1.20	0.70	0.70	0.35	–8.50
20	0.85	0.60	0.50	0.45	–8.00	20	0.85	0.60	0.50	0.35	–10.00
30	0.63	0.47	0.20	0.45	–5.50	30	0.63	0.47	0.20	0.35	–8.50
40	0.55	0.43	0.30	0.45	–4.00	40	0.55	0.43	0.30	0.35	–8.00
50	0.52	0.42	0.40	0.45	–3.50	50	0.52	0.42	0.40	0.35	–8.50
60	0.52	0.43	0.50	0.45	–4.00	60	0.52	0.43	0.50	0.35	–10.00
70	0.53	0.46	0.60	0.45	–5.50	70	0.53	0.46	0.60	0.35	–12.50
80	0.55	0.49	0.70	0.45	–8.00	80	0.55	0.49	0.70	0.35	–16.00
90	0.60	0.54	1.00	0.45	–13.50	90	0.60	0.54	1.00	0.45	–22.50

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Recall that in the short run, firms have fixed costs that must be paid regardless. Thus if a firm can cover its variable costs and still have revenue to contribute to its fixed costs, it loses less money by producing than by shutting down. Our rule of producing where marginal revenue equals marginal cost still applies, but since price is below ATC the firm's loss is represented by the area below ATC and above the demand curve. Even though the firm continues to produce, the amount of production is less than when the price was higher.

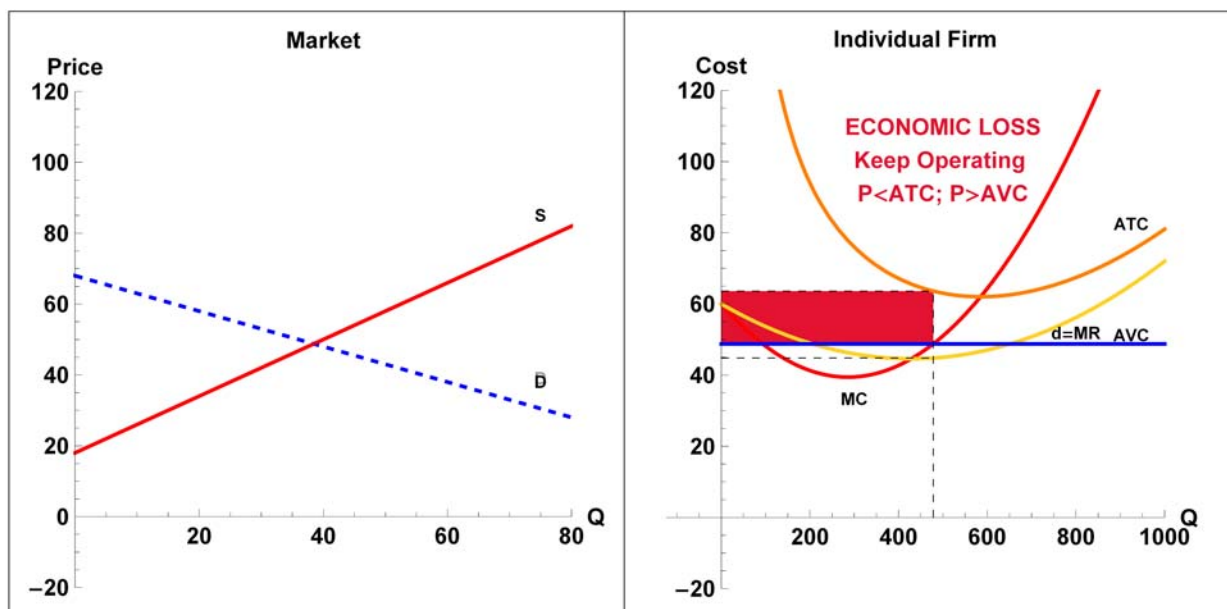
The average fixed cost is the vertical distance between average total cost and average variable cost, thus if the firm decided to shut down the firm would still have to pay the total fixed costs.

As demonstrated in the table above, if the price is below average total cost but above average variable cost, losses are minimized by producing 50 units and incurring a loss of \$3.50. If the firm shut down, it would still have to pay fixed cost of five. Since average variable costs at 50 units is 42 cents and the price is 45 cents, it covers the variable costs and contributes three cents on each unit toward paying the fixed costs. Three cents times 50 units is \$1.50 which is the amount the firm has reduced their loss by producing instead of shutting down.

The graph below illustrates when a firm, who is operating at a loss, should keep operating or shutdown. Move the sliders to see how this changes as costs, supply, and/or demand change.

Pure (Perfect) Competition – Profit and Losses in the Short-Run

Use the slider bar to shift the curves. The two graphs show the market for a good in a purely competitive market. (Note: The quantity in the market is in thousands). The graph on the right shows the firm's cost curves and the horizontal demand curve. Move the sliders to see how profits change when the market price changes (move supply and/or demand sliders), and the firm's costs change (move the variable and/or fixed cost sliders.)



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Shut Down Below AVC

If the **price drops below the average variable cost**, the firm is unable to cover even the variable cost and can reduce the loss by **shutting down** and paying only the fixed costs. Move the "supply" slider to the right until it says "temporarily shutdown." Notice that the AVC is above the firm demand curve (price).

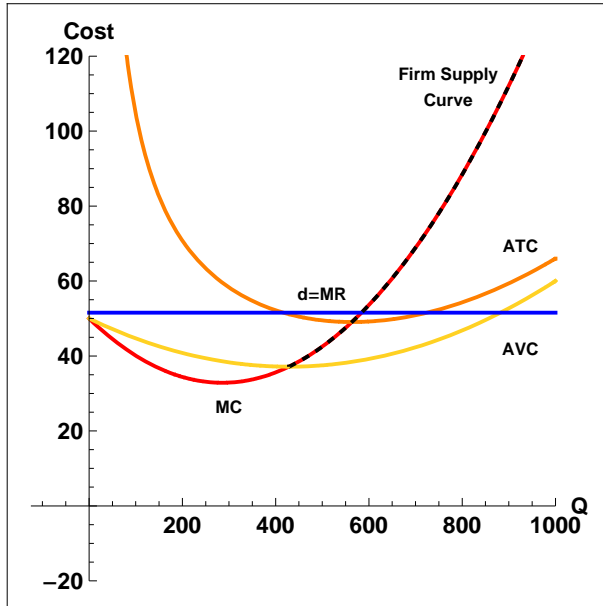
The firm loses less money by shutting down and only incurring the fixed costs than by producing and losing even more.

The Supply Curve

Since profit maximization takes place where marginal revenue is equal to marginal cost, in pure competition the firm's **supply curve** will be its marginal cost curve above the average variable cost. The graphic below illustrates the firm's supply curve. Move the sliders to see how it changes when costs, supply, and/or demand change.

The Firm Supply Curve

Use the slider bar to shift the curves. The firm supply curve is the marginal cost curve above the average variable cost curve. The firm will not supply goods to the market at or below average variable costs. The black and red dashed line is the firm supply curve.



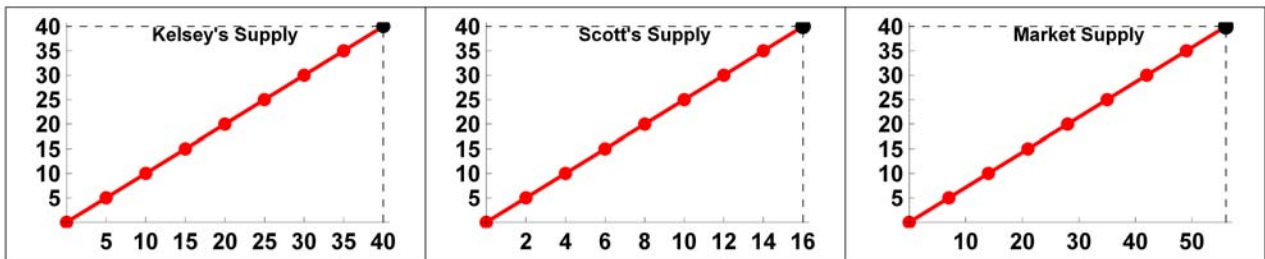
Variable Costs Fixed Costs
 Mkt. Supply Mkt. Demand

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The horizontal summation of the individual firm's supply curves yields the market supply (see graphic below). For example, if we only had two firms (Kelsey and Scott) in the market and the price was 40, Kelsey would supply 40 units and Scott would supply 16. The market supply at 40 would be 56 units. If the price drops down to 15, then Kelsey supplies 15 and Scott supplies 6. The market supply at 15 is then 21 units.

Market Supply Curve

Imagine Kelsey and Scott are the only two producers in a market. Click on each price to see how their quantity supplied changes. Market supply is a horizontal summation of individual supplies.



Price

Individual and Market Supply

Price	Kelsey's Quantity Supplied	Scott's Quantity Supplied	Market Quantity Supply
40	40	16	56

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Key Points for Pure (Perfect) Competition in the Short Run

Here are a few key points to remember for pure competition in the short run.

1. Demand is completely elastic for an individual firm but not for the industry.
2. For the individual firm, price equals marginal revenue.
3. Profits are maximized or losses minimized by producing where $MR = MC$, above AVC .
4. If price is below AVC , the firm should shut down and pay only the fixed costs.
5. The supply curve of an individual producer is the marginal cost curve above AVC .

Ponder and Prove - Section 2 - Pure (Perfect) Competition in the Short-run

Section 2 Questions +

Instructions: Click on the button that represents the correct answer. After you select an answer, click on the 'Grade My Answer' button.

Question 1
Question 2
Question 3
Question 4
Question 5

Producers in a market characterized by perfect competition are price _____, meaning that their demand curve is _____.

Takers ; perfectly inelastic
 Takers ; perfectly elastic
 Makers ; perfectly elastic
 Makers ; perfectly inelastic

Grade My Answer
Reset

"Results"

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Section 3: Pure (Perfect) Competition in the Long-run

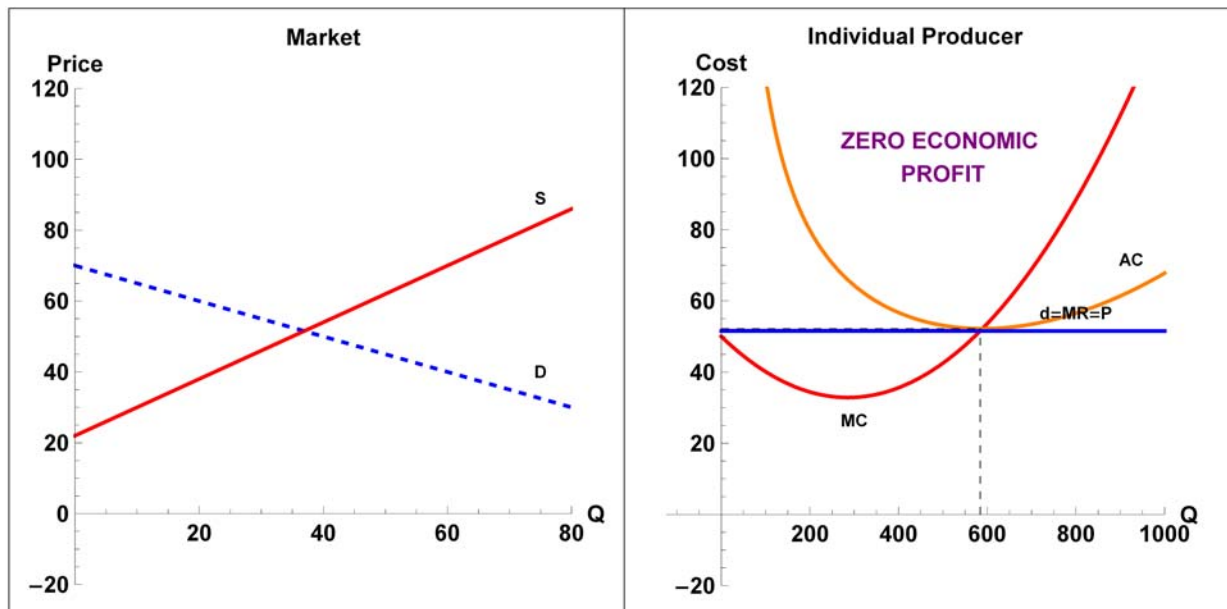
How Firms Behave in the Long-run

How do firms in pure competition behave in the long run?

With low barriers to entry, if the industry is making an economic profit there is an incentive for other firms to enter the market. As more firms enter, the supply of the product increases, driving down the price and reducing the profits. This will continue until the firm's economic profit is reduced to zero. At an **economic profit of zero**, firms are still earning a **normal profit**, which is a return sufficient to maintain the resources in their current use. Recall that in the long run, all inputs are variable. It is for this reason that we don't have fixed costs and that we make no distinction between variable costs and total costs. Move the sliders in the graphic below for market supply and demand to see what happens to the profits when these factors change.

Pure (Perfect) Competition in the Long-Run

Use the slider bar to shift the curves. In the long-run perfectly competitive firms have zero economic profit. The graph starts out in the long-run where $AC=MC=P$ at the profit maximizing quantity. Changes can occur in the market, shifting supply and demand, which will cause firms to enter or exit the market. Eventually, the market will return to zero economic profit.



Supply Demand

Original source code by William J. Polley. Modified by David Barrus, Victoria Cole, and Brent Nicolet

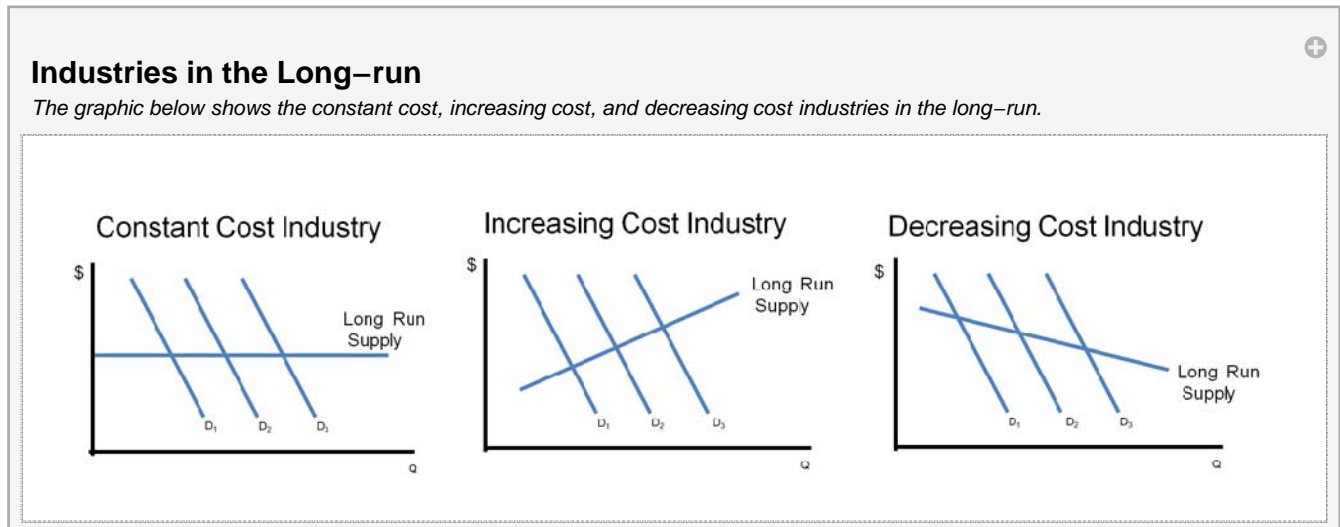
Move the supply slider to the right. The firms are sustaining economic losses. Firms will eventually exit the industry due to the high opportunity costs. As firms leave, the market supply shifts to the left (move slider to the left) and the price increases reducing the losses.

In the short-run firms may earn economic profits or losses, but in the long run economic profits can be expected to be zero and firms will earn only normal profits. In the long run, firms are both productively and allocatively efficient.

Since the marginal cost curve intersects the average cost curve at the minimum, and firms produce where marginal revenue is equal to marginal costs, firms will be **productively efficient** (recall productive efficiency means "least cost" since we are at the minimum ATC, we must be at least cost). Moreover, in this market there is a strong incentive to adopt new technologies which reduce costs. Since there is easy entry into the market, if a firm fails to adopt the new technologies that reduce costs, it will eventually be forced out of the market since it is not producing at the lowest average cost.

Firms are also **allocatively efficient** and produce where the price is equal to the marginal cost. Demand reflects the willingness to pay by consumers and the supply curve reflects the marginal cost. At the quantity produced, economic surplus which is consumer and producer surplus is maximized. The purely competitive market is a useful benchmark when examining other market structures, because it is both productively and allocatively efficient.

Long-run Supply



Coded by David Barrus

If the prices of the resources do not change as their demand changes, then the long run average cost curve for individual firms remains the same as market production increases and decreases. This would likely be the case, if an industry makes up a relatively small portion of the overall demand for the inputs. If this were the case, the long run supply curve would be horizontal and the price of the good would remain constant as output expands or contracts. This is a **constant cost industry**.

Most industries have **increasing costs** such that as the quantity of the output increases, production costs also increase. Likewise if output falls, the price of the inputs will also decrease due to the decreased demand. In our wheat example as output increases, production costs such as the price of farmland increases shifting the average cost curve upwards. This would result in an upward-sloping long-run supply curve.

In a **decreasing cost industry**, the long run supply curve is downward sloping since as output increases and new firms enter, production costs decline. The computer industry is an example of a downward sloping supply curve, since as the number of computers produced increased, the price of inputs, such as chips, decline.

Key Points for Pure Competition in the Long Run

1. Short run economic profits (losses) leads to firms entering (exiting) the industry.
2. Ease of entry will cause long run economic profits to be zero.
3. In the long run, purely competitive firms will be both productive and allocatively efficient.
4. Economic surplus is maximized in pure competition.

Ponder and Prove - Section 3 - Pure (Perfect) Competition in the Long-run

Section 3 Questions +

Instructions: Click on the button that represents the correct answer. After you select an answer, click on the 'Grade My Answer' button.

Question 1
Question 2
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Question 5

Positive economic profit can be defined as:

- Profits above and beyond what is required to operate a business.
- A situation where costs are increasing.
- Profit that is sufficient to cover all costs including salaries.
- A situation where market supply is greater than market demand.

Grade My Answer
Reset

"Results"

Original source code for problem above from Craig Bauling. Modified by David Barrus, Victoria Cole, and Brent Nicolet

Summary

Key Terms

Allocatively Efficient: when a firm is producing where the price equals the marginal cost.

Constant Cost Industries: the condition where firms in an industry experience the same costs as they increase production.

Decreasing Cost Industries: the condition where firms in an industry experience decreasing costs as they increase production.

Increasing Cost Industries: the condition where firms in an industry experience increasing costs as they increase production.

Individual Producer Demand: the amount of quantity a producer is willing and able to produce at a given market price.

Law of One Price: indicates that there should be one price for the commodity if transaction costs are zero.

Marginal Revenue: the additional revenue created by selling an additional unit of output.

Marginal Revenue = Marginal Cost: the point where a firm is maximizing its profit.

Market Structures: the four basic components of a market: the market power, number of firms, barriers to entry, and type of product.

Maximize Profits: when a firm produces at the point where the difference between total revenue and total cost is greatest.

Minimize Losses: when a firm is not able to make an economic profit at a given price, it tries to produce as to minimize their costs by producing at the point where the difference between total cost and total revenue is the smallest.

Monopolistic Competition: a market that contains a large amount of firms, with few market barriers, that produce

either similar or unique products.

Monopoly: a market that is controlled by one firm producing a unique product having no close substitutes.

Normal Profits: when a firm attains an economic profit of zero.

Oligopolies: a market that contains a few large firms that produce either similar or differentiated products.

Perfect Competition: a market that contains many firms, with no barriers to entry, which produce a homogeneous product.

Perfect Information: when each economic entity knows each of the prices for goods and services in each area of the economy.

Price Takers: when a party is unable to influence the market price.

Productively Efficient: when firms produce at the point where marginal cost equal marginal revenue.

Pure Competition: (See Perfect Competition)

Shutting Down: producers will shut down production once the price falls below the point where marginal cost equals the average variable cost.

Supply Curve: a curve representing the amount of goods that producers are willing to produce given a particular price.

Zero Economic Profit: when total revenue equals total costs.

Objectives

Section 1

1. Explain the characteristics of pure competition
2. Explain the characteristics of a monopoly
3. Explain the characteristics of oligopolies
4. Explain the characteristics of monopolistic competition

Section 2

1. Explain the short run behavior of firms in pure competition and derive the firm and industry demand curves.
2. Describe the characteristics of firms in pure competition.
3. Explain why many firms with homogeneous products facing low barriers to entry/exit cause firms to be price takers.
4. Explain the relationship between price, marginal revenue and average revenue for firms in pure competition.
5. Compute the firm's profit.
6. Explain the difference between a normal profit and an economic profit.
7. Explain why firm's making a zero economic profit will continue to produce.
8. Given various prices and cost curves derive the supply curve for a firm in pure competition.
9. Explain when a firm will decide to shut down in the short run.
10. Using the individual supply curves of firms in pure competition derive a market supply curve.

Section 3:

1. Define the long run conditions of firms in pure competition and derive long run supply curves for firms in constant cost industries, increasing cost industries, and decreasing cost industries.
2. Explain why pure competition will lead to productive and allocative efficiency.
3. Graphically identify the area of producer surplus.
4. Graphically identify the area of consumer surplus.
5. Explain why firms in pure completion may earn short run economic profits or losses but will earn normal profits in the long run.
6. Explain the difference between a constant cost industry, increasing cost industry, and decreasing cost industry.
7. Derive a long run supply curve for firms in a constant cost industry.
8. Derive a long run supply curve for firms in an increasing cost industry.
9. Derive a long run supply curve for firms in a decreasing cost industry.

