NAME: Rohin Aryan

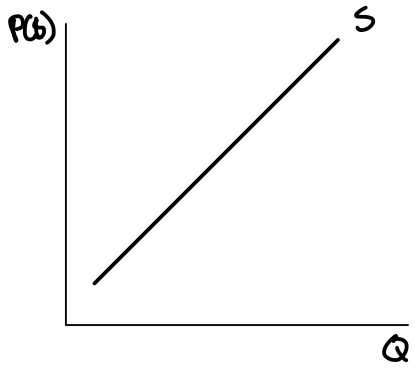
# Supply
## Notes

INDIVIDUAL SUPPLY

- **Individual supply:** the quantities of a good or service… an individual producer is willing and able to produce at different prices in a period.

MARKET SUPPLY

- **Market supply:** sum of all individual firm's supply curves.
- When economists say "supply," they usually mean market supply.
- Market supply is graphed with a supply "curve:"




SUPPLY VS QUANTITY SUPPLIED

- Supply = entire supply curve.
- **Quantity supplied:** the amount of a g$s that firms are willing and able to produce at one particular price and one time period, ceteris paribus.
- Represented by a "point" on the curve.

LAW OF SUPPLY

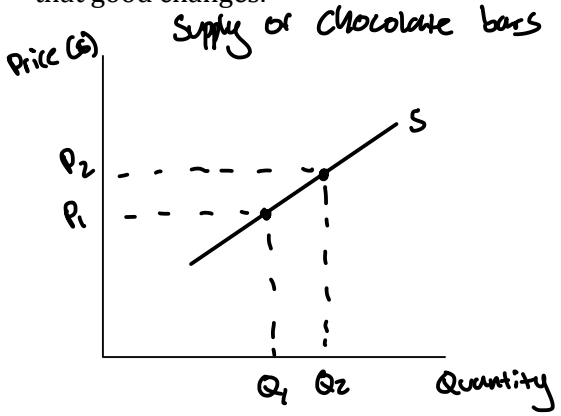
- The **Law of Supply** states:
  - o Price g$s↑, Qs↑
  - o Price g$s↓, Qs↓
- This is known as a positive causal relationship.

WHY DOES THE SUPPLY CURVE SLOPE UPWARD?

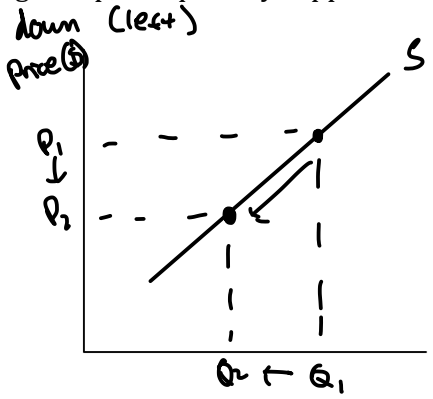
- higher prices means more profits for firms
- More incentive to produce more.
- Lower profits is incentive to produce less

PRICE CHANGES AND SUPPLIED

- Ceteris paribus, when the price of a good changes, only the **quantity supplied** for that good changes.



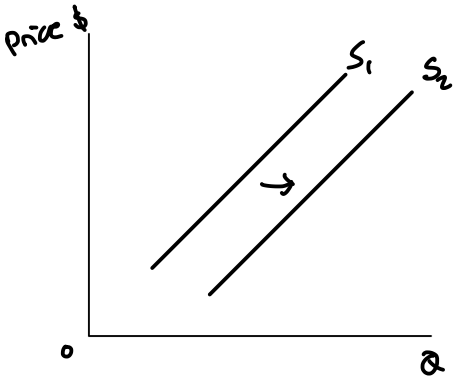
- For example, if the price of chocolate bars goes up, the quantity supplied will go…



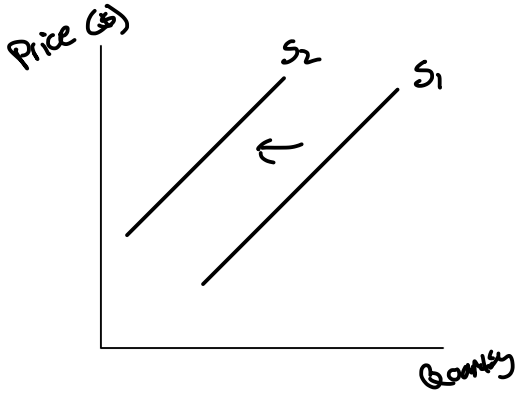

If the price of chocolate bars goes down, the quantity supplied will go…

SHIFTS OF THE ENTIRE SUPPLY CURVE

- If relevant variables other than price change, then the entire curve will shift right or left.




For instance, if the cost of labour decreases, firms can afford to produce more chocolate at every price (and make more profit), so supply will shift to the right.




If, however, the cost of labour increases, firms will produce less at each price, as the potential for profit decreases.

**HL Economics**
**Non-Price Determinants of Supply**

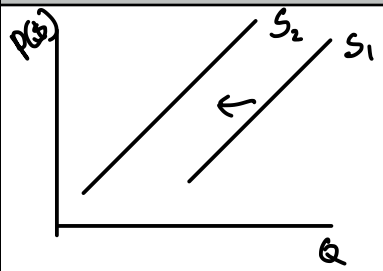
| | Determinant | Real Life Example |
|---|---|---|
|   | **1. Changes to costs of the factors of production**<br>• If prices of FoP↑, then production costs increase, and the firm produces less<br>• Supply curve to the left<br>• If FoP↓ then profit↑ and supply to right | |
|   | **2. Prices of related goods: competitive and joint supply.**<br>• **Competitive supply:** two goods compete for same resources.<br>If price↑ for one, firm may switch to producing two. Supply falls for good 1.<br>• **Joint supply:** Two or more products are derived from a single product. Not possible to produce more of one without more of another.<br>• Increase price of one increases supply quantity on both products. | |

| | | |
|---|---|---|
|  | **3. Government Intervention Taxes**<br>Indirect taxes or taxes on profits<br>• **Indirect Taxes:** Taxes on spending like sales tax<br>• Shifts to left<br>• **Subsidies:** payments to firms by govt to producer more quantity at lower prices.<br>• Shifts curve to right. | |
|  | **4. Expectations about future prices**<br>• If price expected to increase, current stock is withheld in anticipation of selling it later<br>• Shift to left. | |
|  | **5. Changes to Technology**<br>• Improved tech lowers FoP cost.<br>• Shifts to right | |

| | | |
|---|---|---|
|  | **6. Weather or natural disasters**<br>• destruction of quality or quantity of Fop shifts to left | |
|  | **7. Number of firms (not in textbook, but very important!)**<br>●An increase in the number of firms producing a good or service will shift the supply curve to the right | |

## Supply Diagrams Activity

**Instructions:** For each event given, show the change in the supply curve in the column that says "Diagram" and give a reason for the change in the column that says "Reason for Change."

| Market | Event | Diagram | Reason for Change |
|---|---|---|---|
| 1. Pulp and Paper | Fire destroys hundreds of thousands of trees in British Columbia. |   | Costs go up and curve to left |
| 2. Computers | A new microchip is invented. | | |
| 3. Automobiles | General Motors and Ford decide to install anti-pollution equipment on all their smokestacks. | | |
| 4. Beef | The price of pork falls. | | |
| 5. Surf boards | The price of surf boards decrease. | | |

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# How do economists explain the law of supply?
## Notes

WHAT IS A FIRM?

- **Firm:** an institution that hires and organizes the factors of production to produce and sell goods & services

THINKING ABOUT "TIME FRAMES"

- There are two theoretical "time frames" in which a firm operates.

**Short run:**

- A time frame when at least one FoP is "fixed". Quantity or quality does not change
- Capital is usually fixed, and labour is variable (but not always).
- All production takes place in the short run

**Long run:**

- A time frame where all the FoP are variable
- The state of technology is fixed though.
- All planning takes place in the long run

- Actual length of a firm's short run depends on the time it takes to increase the quantity of the fixed factor.
- Will vary from industry to industry.

For example: a small firm involved in gardening may find that its fixed factor is the number of lawn mowers that it has available, and that it takes a week to order and get delivery of a lawn mower. Thus, its short run is one week.

On the other hand: Ontario Hydro is constrained by its fixed factor, the number of electricity plants it has. Building a new electricity generating plant may take years, so its short run is a lot longer.

- If a firm plans ahead to change ils fixed factors then all factors of production are variable as plans are being made
- The firm is planning in the long run.
- As soon as the fixed factors are changed the firm is once again in… the short term

STUDYING PRODUCTION IN THE SHORT RUN

- To study production in the short run, we look at the output of a firm in relation to its… variable input, which is usually labour
- **Total Product (TP):** total quantity produced by a firm
- **Marginal Product (MP):** the additional amount produced per unit of variable input

$$MP = \frac{\Delta TP}{\Delta \text{units of labour}}$$

- **Average Product (AP):** the total quantity of output per unit of variable input (eg. labor)

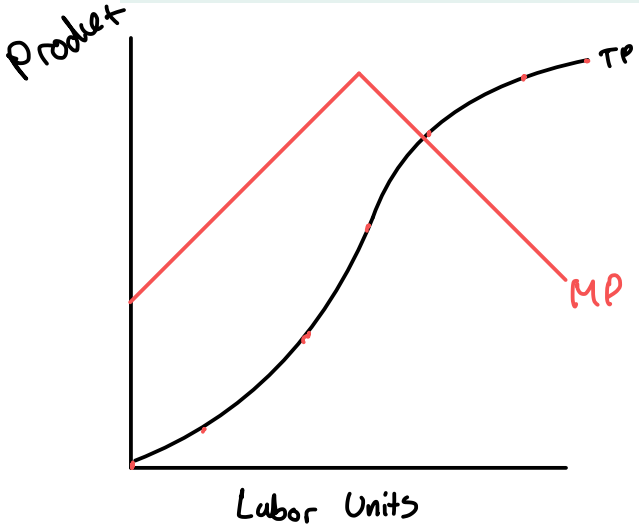
$$AP = \frac{TP}{\text{units of labour}}$$

- This tells us… about how much each unit of labor produces on average

## GRAPHING PRODUCTION IN THE SHORT RUN

| Quantity of labour (V) | Total product (TP) | Average product (AP) | Marginal product (MP) |
|---|---|---|---|
| 0 | 0 | | |
| | | | 10 |
| 1 | 10 | 10 | |
| | | | 15 |
| 2 | 25 | 12.5 | |
| | | | 20 |
| 3 | 45 | 15 | |
| | | | 25 |
| 4 | 70 | 17.5 | |
| | | | 20 |
| 5 | 90 | 18 | |
| | | | 15 |
| 6 | 105 | 17.5 | |
| | | | 10 |
| 7 | 115 | 16.43 | |
| | | | 5 |
| 8 | 120 | 15 | |

▲ **Table 5.3** Total, average and marginal product per week




## THE HYPOTHESIS/LAW OF DIMINISHING RETURNS

- To increase the output in the short run: a firm must apply more… variable inputs to the fixed factors it processes
- As more and more units of a variable input are added to one or more fixed inputs, the marginal product first increases, but then… eventually starts to decrease

## MARGINAL COSTS

MC = The increase in total cost of producing an extra unit of output.

MC=ΔTC/Δq

Increasing MC is related to diminishing returns → if output produced by each additional worker (MP) begins to fall yet each worker costs the same, then the cost of each additional unit (MC) begins to increase

| Total product (TP) or Output (q) | Total cost (TC) ($) | Marginal cost (MC) ($) |
|---|---|---|
| 0 | 400 | |
| | | 200/10 = 20 |
| 10 | 600 | |
| | | 200/15 = 13.33 |
| 25 | 800 | |
| | | 200/20 = 10 |
| 45 | 1,000 | |
| | | 200/25 = 8 |
| 70 | 1,200 | |
| | | 200/20 = 10 |
| 90 | 1,400 | |
| | | 200/15 = 13.33 |
| 105 | 1,600 | |
| | | 200/10 = 20 |
| 115 | 1,800 | |
| | | 200/5 = 40 |
| 120 | 2,000 | |

▲ **Table 5.4** Marginal costs

MARGINAL COSTS AND SUPPLY

Because of the law of diminishing returns, as output increases, so to do marginal costs

Therefore…. firms will only be prepared to supply more and increase output if the prices they recieve for the product goes up as output increases

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# How do economists explain the law of supply? Activity

TIME FRAMES

Instructions: improve your knowledge of the **short run** and **long run** by considering the following scenario and answering the questions.

A small firm sets up a plant making teddy bears. The firm has a small production unit, including two teddy bear making machines and two operators. There is one manager, who owns the firm, and carries out all non-production activities. There is also an unlimited amount of the materials needed to make the teddy bears.

1. What are the fixed factors of production?

Machines + plant (capital), operators (labour), manager (entrepreneur)

2. What are the variable factors of production?

Materials (land)

Now assume there is an increase in demand for teddy bears and the firm decides to satisfy this demand by using the existing factors of production.

3. What is the only thing the firm can do?

Input more materials into the product (increase variable units)

Finally. assume the increase in demand persists, and so the firm decides it is time to expand the production unit, bring in two extra machines and employ two more workers.

4. What time period is the firm in when they expand their operations?

Long run (planning phase)

5. What time period is the firm in once the changes to the plant have taken place and the firm is producing again?

Short run (production phase)

6. What are the fixed factors production at the end of the expansion?

Everything in #1 plus 2 more machines and 2 more workers

TOTAL, AVERAGE AND MARGINAL PRODUCT

Instructions: Complete the following table and graph Total Product (TP), Average Product (AP) and Marginal Product (MP).

| Q of Labour | TP | AP | MP |
|---|---|---|---|
| 0 | 0 | - | - |
| | | - | 9 |
| 1 | 9 | 9 | - |
| | | - | 13 |
| 2 | 22 | 11 | - |
| | | - | 17 |
| 3 | 39 | 13 | - |
| | | - | 20 |
| 4 | 59 | 14.75 | - |
| | | - | 11 |
| 5 | 70 | 14 | - |
| | | - | 2 |
| 6 | 72 | 12 | - |

1. At what quantity of labour can we see the law of diminishing marginal returns in marginal product?

   At 4.5 units

2. How is marginal product related to marginal cost?

3. How is marginal cost related to the law of supply?

On notes.

| | | | |
|---|---|---|---|
| 6.Teddy Bears | Pokémon dolls surge in price. | | |
| 7. Gasoline | Members of the Organization of Petroleum Exporting Countries (OPEC) raise the price of crude oil. | | |
| 8. Automobiles | Methods are developed which allow steel to be produced at a lower cost. | | |
| 9. Baseballs | Cheaper Taiwanese labour is used to produce baseballs. | | |
| 10.Orange Juice | A strong tropical storm hits most of Florida, destroying orange groves. | | |