

# ECON 120

## Cheat Sheet Test 3

### Optimization $\frac{MU_x}{P_x} = \frac{MU_y}{P_y}$

Consider the amount of "helpfulness" gained from any specific thing. For supplier, this is units of **product**. For consumer, units of **utility**.

Utility ≠ value, otherwise water would be more expensive than diamonds. **Marginal utility** is more accurate: the change in total value from 0 diamonds to 1 is greater than change from 100 litres of water to 101. Thus, optimize the **marginal product/utility per dollar**.

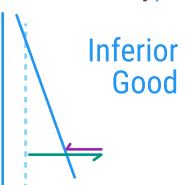
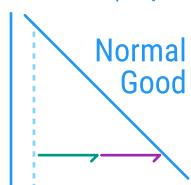
Distinguish **accounting profit** from **economics profit** by taking into account economic (implicit) costs – opportunity costs incurred from not doing things.

Specifically: cost of people's time, cost of money's time (interest/risk)

### Consumer Behaviour

Two effects when price goes down: **substitution** (always up)

**income** (depends on elasticity)



Inferior demand curve can slope up.

**Giffen goods** are super essentials.  
**Conspicuous consumption** goods are super luxury goods.

### PPFs

Opportunity cost =  $dA/dB$

Careful: unemployment moves current point inwards, not the whole PPF

#### Linear PPF

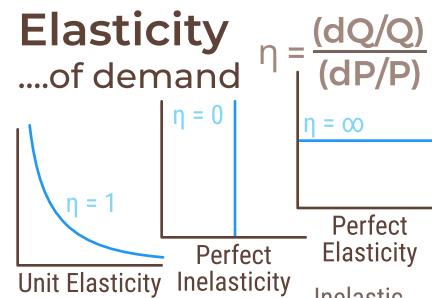
Perfectly efficient resource re-allocation.

Constant opp. cost = slope.

#### Bowed Out PPF

Inefficient resource allocation.  
Opportunity cost increases with production.

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### Supply and Demand

Curves are determined by sums of individual curves

Individual curves from indifference/budget curves

$S+ \rightarrow P+Q+$   $D+ \rightarrow P+Q+$   $SD+ \rightarrow P?Q+$   $S>D \rightarrow P+Q?$

$S- \rightarrow P+Q-$   $D- \rightarrow P-Q-$   $SD- \rightarrow P?Q-$   $D>S \rightarrow P-Q?$

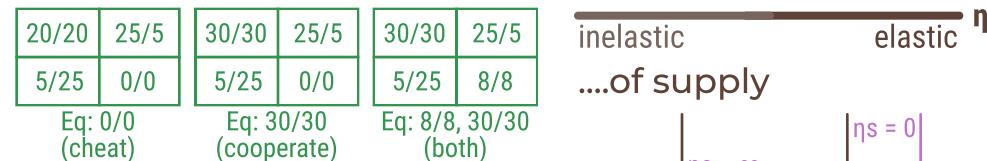
### Game Theory

Like **Prisoner's Dilemma**, what other firms do affect profits. Firms can cooperate (tacitly or explicitly) to achieve the best outcome in **cooperative equilibria**.

Sometimes in non-cooperative games, one **dominant strategy** always finds the best outcome. These strategies tend to a **Nash equilibrium**.

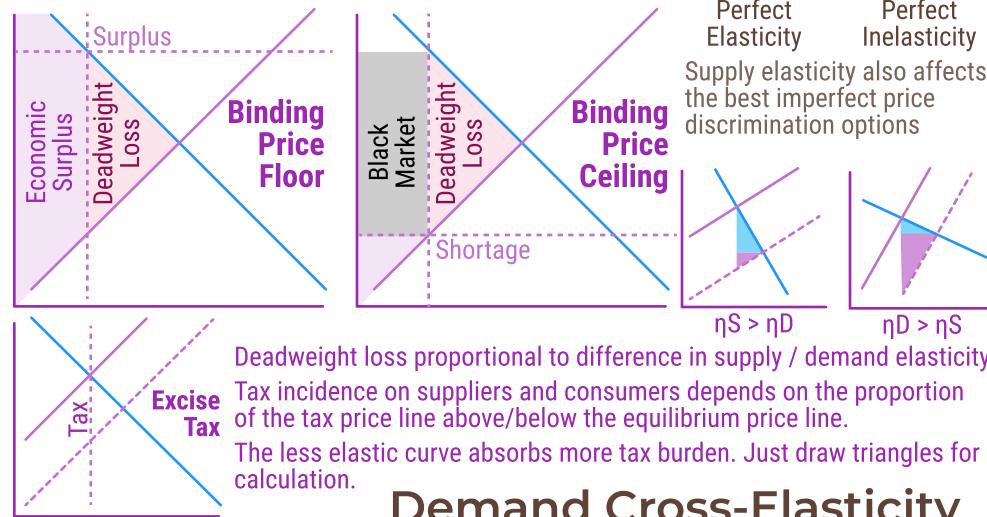
If  $\pi(\text{coop}) > \pi(\text{mixed})$ , there is a coop equilibrium.

If  $\pi(\text{cheat}) > \pi(\text{mixed})$ , there is a cheat equilibrium.



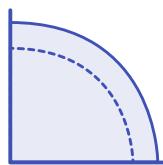
### Government Intervention

Floors bind above equilibrium, ceilings bind below



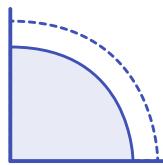
### PPF Expands

Possibilities expanded.  
Technological advancement, population increase.

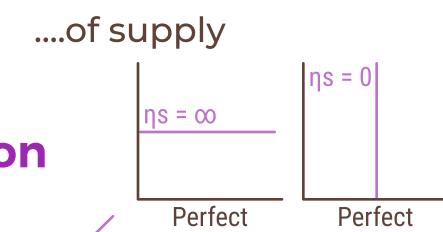
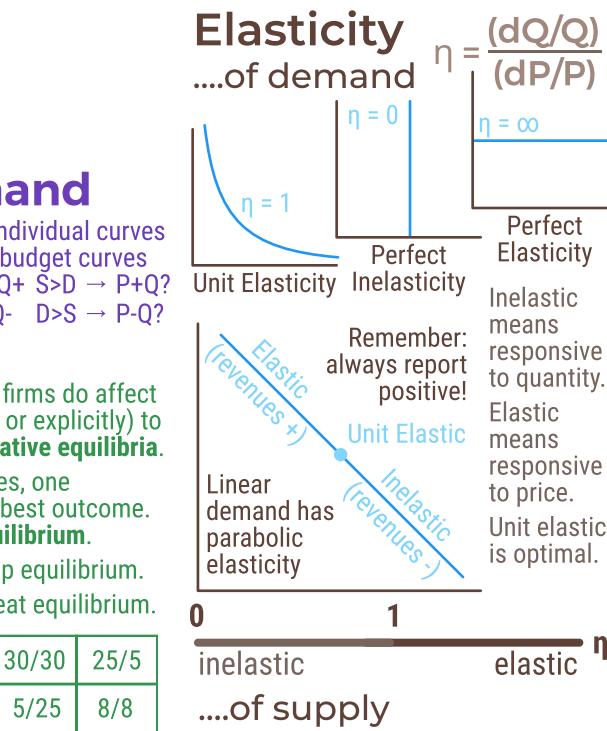


### PPF Contracts

Possibilities contracted.  
Resource loss, population decrease.



PPFs bowed inwards, where opportunity cost decreases with production, aren't realistic, but would have something to do with economies of scale.



### Demand Cross-Elasticity

Given cross-elasticity of X and Y, calculate the same way but have good X's demand over good Y's price

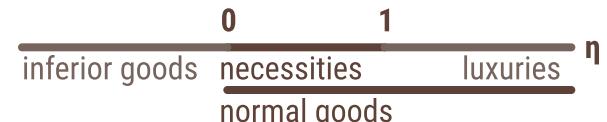


Complements are goods that are used together.

Substitutes are goods that can replace each other.

### Income-Demand Elasticity

Calculate the same but instead of price use income



Inferior goods are those people buy less when rich

Necessities are staples that everyone needs

# Supplier Behaviour

Define time scales based on how many things are variable – in the **short run** only some factors are variable. In the **long run**, all factors are variable. In the **very long run**, the method of production itself is variable.

## Short Run

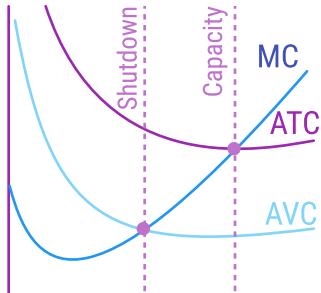
A supplier's costs can be variable or fixed, so:  $TC = TFC + TVC$

It's best to express these as quantity derivatives:  $ATC = AFC + AVC$

These are minimized when they cross the **marginal cost** curve ( $\Delta TC/\Delta Q$ ).

If  $AP > MP$ , then AP goes down towards MP.

If  $AP < MP$ , then AP goes up toward MP.



Firms must pay FC no matter what, so if  $MC < AVC$ , there's no point in staying open so the firm **shuts down** (distinct from exiting when long-term is unviable)

## Very Long Run

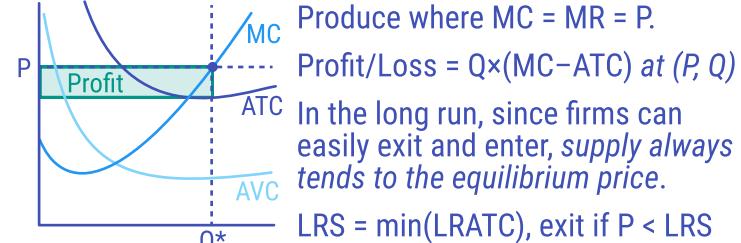
In the very long run, you can change the LR-ATC's shape. Technological advancements can move the curve downwards, reducing costs for every possible production level.

## Types of Competition/Markets

Spectrum from perfect competition → oligopoly → monopolistic competition → monopoly

## Perfect Competition

Firms are small wrt market, so can sell infinite product at market price. Products are homogenous; easy enter/exit.



Firm graph is only externally affected by price and costs

## Monopolistic Competition

Firms that have monopoly on a differentiated product.

Acts like a monopoly in short run, perfect competition in long run since firms freely enter and exit until profit is zero.



## Oligopoly

Pricing acts exactly like monopolies but split between firms, where discrimination occurs on the firm scale. The maximum profit for the industry is a perfectly price discriminated monopoly, so firms must agree on division of product.

This requires **collusion** since profit-seeking wishes to lower price but oligopolies maximize profit by raising price. Easiest way is **explicit collusion** which is an agreement to cooperate, usually illegal, sometimes defined as a **cartel**. It's not illegal to **tacitly collude** with price-match or other things. **Oligopolies are defined as 4-firm concentration > 40%**

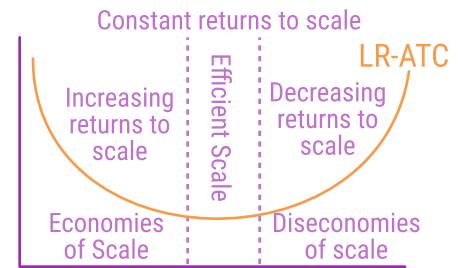
## Long Run

In the long run, go between SR-ATCs.

All possible short-run cost curves' respective minimum points create a **long-run average total cost curve**.

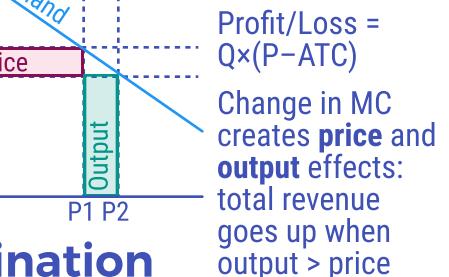
Minimized point where marginal products per dollar are equal.

As the LR-ATC decreases, the marginal cost (lowest SR-ATC point) decreases, and returns to scale increase.



Monopolists can set the price, so they set **price at demand** where **marginal cost equals marginal revenue**

Monopolies come about **naturally** with utilities / specific manufacturing / economies of scale, or can be **created** through gvmt action / IP rights / trade groups. Generally, down sloping ATC



## Price Discrimination

It's most efficient to **perfectly price discriminate** by selling to everyone at demand so entire  $\int D - ATC$  is profit.

That's usually impossible (except for airlines etc.) so **imperfect price discrimination** buckets customers. More elastic demand gets lower price.

Putting effort into moving between buckets is **hurdle pricing** so people with more marginal utility put in effort.