

ECON1101 Notes

COMPARATIVE ADVANTAGE

- **Opportunity cost, comparative advantage, absolute advantage**

An agent has the absolute advantage in a given activity if they can perform that activity more efficiently than others in the economy. The opportunity cost of performing an activity is defined as the value of the next best alternative sacrificed in order to perform the activity. An agent has the comparative advantage in a given activity if they have the lowest opportunity cost for performing that activity.

- **The principle of comparative advantage and the low-hanging fruit principle**

The principle of comparative advantage states that it is beneficial to all members of an economy if each individual specialises in the activities for which they have the comparative advantage. The low-hanging fruit principle states that when increasing production of a good, the first resources employed should be those with the lowest opportunity costs, and only when those are exhausted should resources with higher opportunity costs be employed.

- **Individual and economy-wide PPCs**

The production possibility curve, or PPC, is the graph of all production possibilities for an economy or individual. Points lying on the PPC are efficient production points, and are also attainable production points. Points lying between the PPC and the axes are inefficient attainable production points. Points lying outside the PPC are unattainable production points. The gradient of the PPC at any given point is equal to the opportunity cost of producing one additional unit at that point (the marginal opportunity cost). As per the low-hanging fruit principle, economy-wide PPCs can be drawn by starting at the x-axis and drawing the line for the individual with the lowest opportunity cost, then the line for the individual with the next lowest opportunity cost, and so on. In a small economy, this will be a series of discrete curves – in a larger economy, it will be a single smooth curve.

Changes in price or quantity demanded result in movement along the demand curve, whereas changes in preferences affecting marginal benefit shift the demand curve.

The demand curve is shifted to the right by:

Advertising and marketing.

Decreases in the price of complements.

Increases in the price of substitutes.

An increase in income (for a normal good).

A decrease in income (for an inferior good).

A positive shift in consumer preferences for a good.

Expectation of future price increases.

Population growth.

Supply and demand curves can be interpreted horizontally (by starting from a given price and determining the quantity of goods produced or consumed) or vertically (by starting from a given quantity and finding the maximum price consumers will pay for the marginal unit of the good (the Consumer Reservation Price) or the minimum price producers will demand for the marginal unit of the good (the Producer Reservation Price)).

- **Definition of equilibrium**

Supply and demand curves can be graphed together to find the equilibrium price and quantity (the profit-maximising condition, where $MB=MC$). At all other prices, there is either excess demand or excess supply. At the equilibrium price and quantity, no member of the market has economic incentive to change the state of the market. The Invisible Hand Principle states that in the long run, the efforts of individuals to maximise their own gains will result in the socially optimal (equilibrium) allocation of resources.

- **Producer and consumer surplus**

The consumer surplus is the gain by consumers caused by the difference between their consumer reservation price and the market price. The producer surplus is the gain by producers caused by the difference between their producer reservation price and the market price. By the cost-benefit principle, producers and consumers should buy and sell goods when their surplus is positive.

Total consumer surplus can be calculated from the supply and demand graph by calculating the area between the demand curve, the y-axis, and the equilibrium price. Total producer surplus can be calculated from the supply and demand graph by calculating the area between the supply curve, the y-axis, and the equilibrium price. The sum of total producer surplus and total consumer surplus is the total surplus, which is maximised when the market is at equilibrium.

The prisoner's dilemma game, or cartel game, is a simultaneous game where firms may not cooperate even if it would be mutually beneficial. Of note, the Invisible Hand Principle does not apply here – when companies act to maximise individual gains, total market surplus is not maximised, due to strategic interactions.

A cartel is a private agreement aimed at increasing the profits of cartel members by reducing market competition, often by controlling prices or preventing competitors from entering the market. Cartels are illegal under competition law, which is why cartel members must trust other members to act according to the interests of the cartel, not their own interests (as in the prisoner's dilemma game).

This type of game can be applied to *adverse selection*, in examples like cheating in sport or selling non-functional products, where the assumption that other players will act immorally means that to stay in the game all players must act immorally. This causes moral players to leave the game.

		Company B	
		Price Cut	No Price Cut
Company A	Price Cut	100, 100	200, 0
	No Price Cut	0, 200	150, 150

- **Coordination game**

A coordination game is a simultaneous game where players benefit from coordinating their decisions. In this game, there are no dominant strategies, but two Nash equilibria exist: each one being where both players choose the same strategy. This game can also be called a *stag hunt game*.

		Wife	
		Boxing	Opera
Husband	Boxing	20, 10	0, 0
	Opera	0, 0	10, 20

- **Mixed strategy games**

A mixed strategy game is a simultaneous game where there are no Nash equilibria that can be reached by choosing the same strategy consistently. Instead, a mixed strategy must be employed. Examples of mixed strategy games are the matching pennies game, or the penalty kick game shown below:

		Striker	
		Left	Right
Goalkeeper	Left	0, 0	-1, 1
	Right	-1, 1	0, 0

Clearly no Nash equilibria exist in the table above: The Nash equilibrium of this game is (-0.5, 0.5), where the goalkeeper dives each way 50% of the time and the striker shoots each way 50% of the time. This gives neither player incentive to unilaterally deviate, as the result would be identical, not better.

EXTERNALITIES

- **Definitions and examples**

marginal cost). Free-riding occurs because of the non-rival (paying consumers enjoying the good does not stop free-riders from enjoying the good) and non-excludable (free-riders cannot be excluded) nature of public goods. This leads to under-provision of public goods, in some cases causing them not to be provided at all.

The Samuelson condition can be reached by all parties agreeing to pay for the public good based on their own marginal benefits, hence covering the total cost. This is the Lindahl prices structure, and the price each consumer pays is their Lindahl price. However, this will not occur in a free market as the surplus of free-riders is decreased by paying Lindahl prices, so they will not consent to it.

- **Government provision**

Under-provision of public goods leads to government intervention, where the government imposes taxes in order to provide public goods themselves, such as defence, education, and healthcare. Government taxation is inefficient due to the inability for first degree price discrimination in taxation, so they tax under two fairness principles instead: ability to pay, under which the rich pay more taxes because they can afford to (such as income taxes); and usage, under which those who use the public good more pay more taxes (such as tolls).