

Chapter 3 → Indifference Approach

- advantages

- * allows us to distinguish between the income effects + substitution effects of a change in the price of a product.

Cardinal + ordinal utility

Ordinal → core of the indifference approach.

Utility approach → based on cardinal utility

indifference → employs notion of ordinal utility.

→ Ordinal ~~scale~~ ^{utility} - simply indicates that some distances are shorter or longer or the same as other distances. enables us to rank distances. → but does not enable us to determine precisely how the distances compare: Size relationship of ordinal numbers can not be established - Can only rank from lowest → highest/best → worse

→ Cardinal utility → based on assumption that satisfaction (utility) is somehow measurable on a cardinal scale + that differences ~~are~~ in the utility can be precisely quantified.

Indifference assumption

* based on less stringent (more plausible) notions of utility

* confined to comparing diff goods/services + CANNOT analyze the consumption of a good in isolation.

3 basic assumptions

→ completeness. → consumer able to rank all possible combinations of a good/service in order of preference. → must be able to value 2 combinations equally. ^{or} → indifferent to the 2 products.

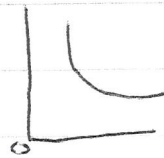
→ Consistency. → consumers are able to act consistently

→ Non-satiation → consumer not yet satisfied prefer more to less.
eg Package A contains 2 of an item Package B contains 1 of the same → consumer will pick A

Indifference curves

→ a curve which shows all the combinations of 2 products that will provide the consumer with equal levels of satisfaction of utility.
Combinations are equally desirable + the consumer is thus indifferent between them.

- when a curve bulges towards the origin it is convex when viewed from the origin



Law of substitution.

→ the scarcer a good became the greater its substitute value will become.

The fewer packets of a product (veggies) the less he is prepared to give up for the substitute (meat)

Marginal Rate of substitution (MRS) - the rate at which the consumer is prepared to sacrifice a small quantity of one good for a little more of another.

When we move downwards from left to right along an indifference curve, the marginal rate of substitution (= to the slope of the curve) decreases. The law of substitution can therefore be called the law of diminishing marginal rate of substitution.

Properties of indifference curves

- Indifference curves differ from one consumer to the next.
- Indifference curve shows various combinations of 2 goods/services which yield the same level of satisfaction/utility.

Indifference map (contains a collection of points (indifference curves) many

- collection of indifference curves for any consumer's choice between 2 products. (Various sets)

- indifference curves never intersect or touch each other.

* - because all product on a particular curve provides the same level of satisfaction/utility to the consumer.

∴ each curve will provide same level of satisfaction, & can never touch as they are equal distance/satisfaction from each other. Consumer prefers More to Less.

The budget line

- the combinations the consumer can afford

- Slope of the budget line = $Q_v : Q_m$

↳ exchange ratio.
Price Ratio: P_x / P_y

Budget line \rightarrow consumption possibilities ~~line~~ ^{curve}, expenditure line/budget constraint

- only need to calculate 2 points where it intercepts the 2 axes + draw a straight line

Consumer Equilibrium (highest affordable level of satisfaction)

\rightarrow budget line is combined with the indifference curves + the consumer equilibrium is calculated

Consumer Equilibrium \rightarrow highest possible achievable point where the consumer's indifference curve form a tangent with the consumer budget line.

\rightarrow Consumer can choose any point on the budget line as we are assuming he/she is spending all the available cash/money/budget

Algebraic approach

$$\begin{aligned} \text{Income} &= (\text{price of } Y \times \text{quantity of } Y) + (\text{price of } X \times \text{quantity of } X) \\ &= (P_Y \times Q_Y) + (P_X \times Q_X) \end{aligned}$$

$$I = (P_Y Q_Y) + (P_X Q_X)$$

$$Q_Y = \frac{I}{P_Y} - \frac{P_X}{P_Y} Q_X$$

Equation of a straight line I/P_Y as the intercept on the vertical axis and P_X/P_Y as the slope of the line.

$$\begin{aligned} \text{Slope of the line} &= \frac{\text{vertical difference}}{\text{horizontal difference}} = \frac{I}{P_Y} \div \frac{I}{P_X} \\ &= P_X/P_Y \end{aligned}$$

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$$\Delta Q_y * MU_y = \Delta Q_x * MU_x$$

ΔQ_y = the change in the quantity of y

MU_y = the marginal utility of y

ΔQ_x = the change in the quantity of x

MU_x = the marginal utility of x

$$\Delta Q_y / \Delta Q_x = MU_x / MU_y$$

MRS = marginal rate of the substitution

$$\Delta Q_y / \Delta Q_x = MU_x / MU_y = MRS$$

NB Equilibrium = $MRS = \Delta Q_y / \Delta Q_x = MU_x / MU_y = P_x / P_y$

- Marginal Rate of substitution (or slope of indifference curve) is the Ratio of marginal utility of the one good to the marginal utility to the other good

$$MRS = MU_x / MU_y$$

- If the consumer is in equilibrium, the marginal rate of substitution (MRS) is exactly equal to the ratio of the ~~prices~~ prices of the two goods ~~is~~ concerned (P_x / P_y)

- At equilibrium the ratio of the marginal utilities of 2 goods is equal to ratio of their prices

$$MU_x / MU_y = P_x / P_y$$

$MU_x / P_x = MU_y / P_y$ \therefore at equilibrium the marginal utilities + the prices of the consumer goods must be proportionate to each other

∴ the consumer is only in equilibrium when he/she derives the same marginal utility ~~for~~ from the last \$ spend on good X ^{as} from the last \$ spend on ~~good~~ good Y

As long as the ~~ratio~~ ratios of marginal utility to price is not equal for all goods, the consumer can attain a higher level of total utility by adjusting his/her ~~of~~ purchasing pattern. Once the ratios are equal total utility cannot increase as consumer equilibrium has been reached.

Consumers valuation and the market valuation.

As long as there is a difference between the consumers subjective valuation and the markets objective valuation of the relative importance of the goods, the consumer can ~~to~~ improve his/her position by exchanging products, but when the valuation coincide no further improvement is possible and ~~at~~ equilibrium is reached.

Changes in Equilibrium

* Change in income

if consumers income increases but prices remains stable / same - can choose to purchase more of one or both goods - budget line shifts -
to the \rightarrow Right / decreases \leftarrow left.

income - consumption curve which indicates the effect of changing income on the consumers' consumption of the 2 goods

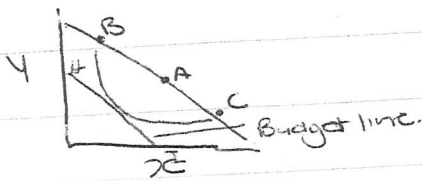
When income changes, the equilibrium quantities of the goods concerned will not always change in the same direction. If increase in

income results in an increase of the quantity of good demanded, the product is called a Normal Good
 - causes a decrease its an inferior good.

income increases budget line shifts parallel to the right.

When a consumer's income increases, there is 3 possible outcomes.

A * if budget line touches the highest attainable indifference curve at point after an increase in income more x & y is consumed. (x & y is normal goods)



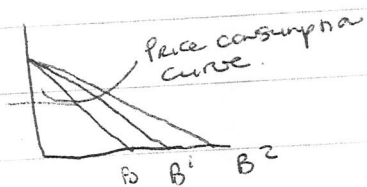
B * if equilibrium is reached at B then y is normal + x is inferior

C * if equilibrium is reached at C then y is inferior + x is normal good.

Change in price, the price consumption curve + the demand curve of an individual consumer.

* Price consumption curve - the locus of optimum combinations of x & y that result from a price change when money income remains constant. - 2 directions

- price increase
- price decrease



Demand curve differs from the price consumption curve

Price consumption curve relates to quantities of both products.

Demand curve relates to 1 product whose price changes.

Price consumption curve does NOT show the price of the good.

Income and substitution effects of a price change.

Income
Effect

Decrease in price of good. \rightarrow consumers experience an increase in available cash for other products, + can therefore buy more goods with the same income (real) the effect of a change in "real" income.

On a consumer's purchases of a certain good is called the income effect. \rightarrow increase in consumption of a normal good

decrease in consumption of a inferior good

Substitution
Effect

good price decrease means that the good is becoming cheaper relative to all other goods if their prices remained constant

It becomes an attractive option to purchase more of the good whose price has fallen. \rightarrow buys more of the cheaper good than the more expensive good.

Price effect - 2 separate effects Income + substitution. In a normal good both the effects are in the same direction + reinforce each other. Demand curve has a typical shape sloping downward from left to right.

Inferior Goods

Income effect can be negative \rightarrow quantity demanded may move in the opposite direction to the change in real income caused by the price change. \rightarrow product is an inferior good.

Purchase less of the cheaper product + buy more of the more expensive product

Giffen goods

- theoretically possible but unlikely to happen
- negative income effect from a decrease in the price of an inferior good can be stronger than the substitution effect
- price decrease of such a product will result in the loss (instead of more) of the good being demanded.
- contradictory of the law of demand.
- doubtful these goods exist and if they do very rare.
- Demand curve slopes upwards from left to right.
- must be an inferior good on which the consumer spends the majority of his income.
- Giffen goods if they exist applies to only very poor people as only the very poor will spend most of their money on an inferior good.

Price effect - Summary

- * price of product increases/decreases it leads to a reaction by the consumer which is known as the price effect.
- * consists of an income effect as well as a substitution effect and there is no priori reason these 2 work in the same direction
- * Price effect = Income effect + Substitution effect

* Following a price ~~effect~~ ^{drop} of one of the goods, the substitution will always induce on the individual to ~~be~~ purchase more of the cheaper good.

* Income effect works in 2 directions

Good is normal then more of the good whose price fell will be purchased
 Good is inferior then less will be purchased.

Type of Good	Substitution effect	Income effect	Price effect
Normal Good	+	+	+
Inferior Good	+	-	+
Giffen Good	+	-	-

Indifference technique applied to labour.

Market supply curve slope upward left to right.

Trade-off between work + leisure.

work - trade - time not working used for leisure.

Wage rate increase - means that leisure time has become more expensive (When wage increases ^{to a certain point}, the consumer is willing to work more hours - less leisure time.) leisure time = normal product

Backward bending supply curve of labour.

* 2 products consumer must choose between are income + leisure

* Utility maximization will occur at the point where an indifference curve is tangent to its corresponding wage constraint line.

* wage increase slightly work less hours - higher wage increase = work more hours.