

Microeconomics II

introductory lecture

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- Course information: Study materials in IS –
MPE_AMI2

Exam

- ✠ Written multiple-choice test – to pass you need at least 60 % score
- ✠ Test structure: each question includes 4 possible answers (theory + applications), 0-4 right answers vs. only 1 of 4 right answers => not sure yet, but will let you know in time...
- ✠ How to succeed: get the theory – be able to apply the theory – not to underestimate the preparation – use your own brain

Literature

- **Frank, R.:** Microeconomics and Behavior (whatever edition)
- **Varian, H.R.:** Microeconomics: a Modern Approach (whatever edition)

1. Introduction to the consumer's behaviour analysis

What is the goal of the consumer's behaviour theory?

- to understand and take the terms like: **rationality, utility, sacrifice**, thus...
- ...to understand principles of consumer's choice out of several alternatives (i.e. in consumption)
- the goal of the theory **IS NOT** to provide an ordinary consumer with a „decision making manual“ – an ordinary consumer is responsible and knows his or her preferences

Rationality

Is the behavior of an ordinary consumer rational?
How do we know? → RATIONALITY AXIOMS:

1. *Axiom of instauration* – consumer prefers higher quantity of all goods to lower quantity (in the case of „eligible“ goods)
2. *Axiom of transitivity* – if cage A is preferred to cage B, and B to cage C, then cage A must be preferred to cage C
3. *Axiom of variety (diversity, convexity)* – consumer prefers an average consumption to extremes – i.e. consumption of food and beverages

Rationality

Can we simply say that: *if all the axioms are fulfilled, the consumer's behavior is rational, and if axioms are not fulfilled, the consumer's behavior is irrational?*

NO! The axiom fulfillment only gives chances that the observed behavior is rational

Consumer's behavior might be rational in spite of axioms are not fulfilled, i.e.:

- ineligible or neutral goods (insaturation axiom not valid)
- consumer's specialization (variety axiom not valid)
- saturated preferences (insaturation axiom not valid)

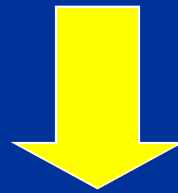
Rationality: summary

- rational behavior leads to maximizing the consumer's total utility
- rationality is a subjective category: we cannot say that this or that behavior is rational and this or that irrational
- in general – consumers behave themselves rationally, because they do their best decisions under given conditions (given information, disposable income, prices of goods and services etc.)

Utility

Utility = an effect resulting from the consumption of specific combination of goods and (or) services - „variable“ showing the trend of consumer's preferences

Utility is not an objective category but a subjective one
How can we (can we?) measure the utility?



cardinalistic vs. ordinalistic
approach

Cardinalism

CARDINALISTIC APPROACH – utility is measureable directly, it assumes specific value

Menger, Jevons, Walras – cardinalists, but without explanation how to measure utility

Alfred Marshall – utility measureable indirectly with the value of money – demand price

Total Utility (TU) – total rate of needs satisfaction

Marginal Utility (MU) – change of TU induced with the consumption of additional unit of goods or services

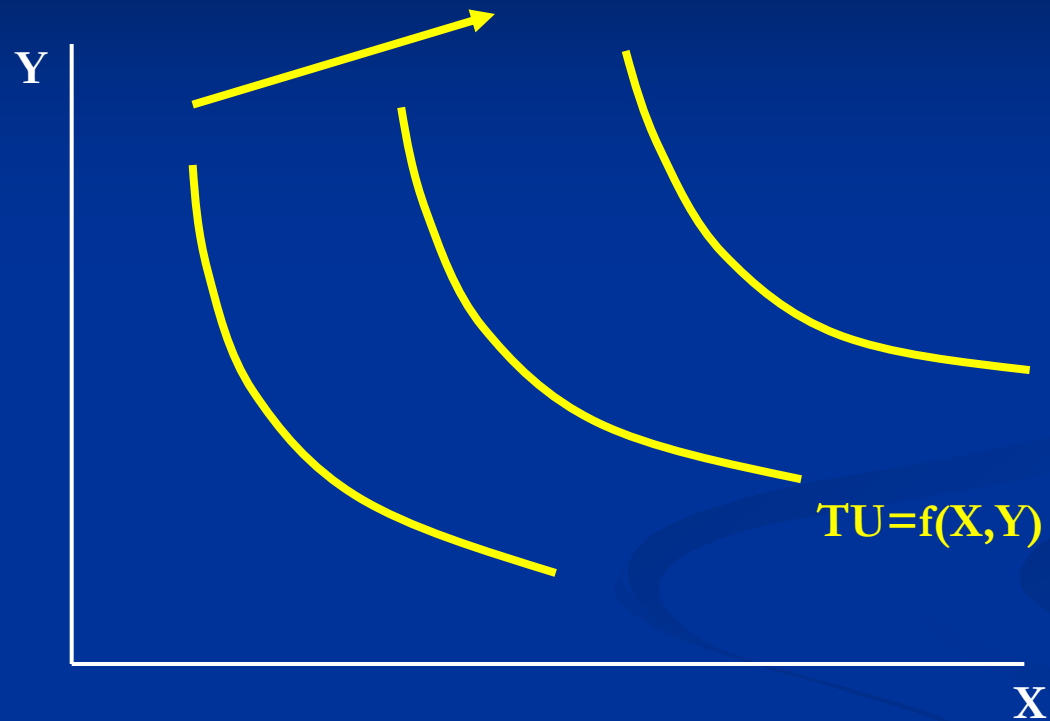
Ordinalism

ORDINALISTIC APPROACH – utility unmeasurable (or does not make any sense to measure it), but consumer is able to consider commodity bundles from the utility point of view

V. Pareto, J. R. Hicks - ordinalists

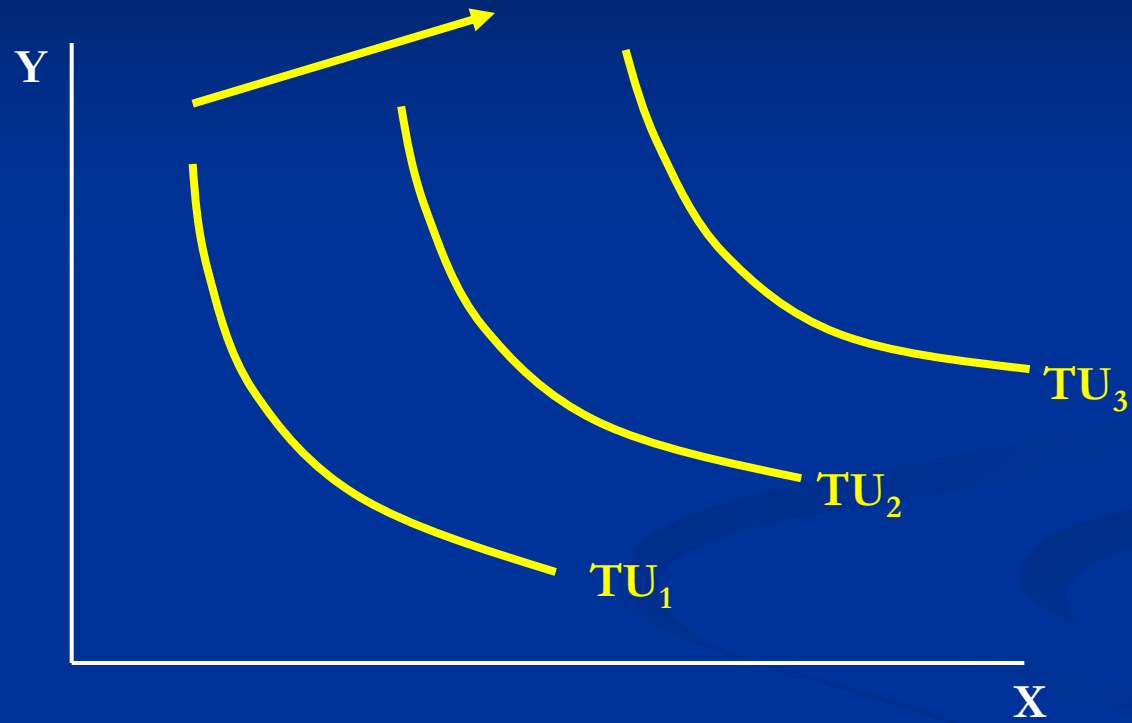
Indifference Curve, (IC) – the set of combinations of several kinds of goods that give the consumer an equal level of total utility – an instrument to draw the consumer's preferences

Total utility - cardinalism



Total utility as a function of volume of goods X and Y

Total utility - ordinalism



$$TU_3 > TU_2 > TU_1$$

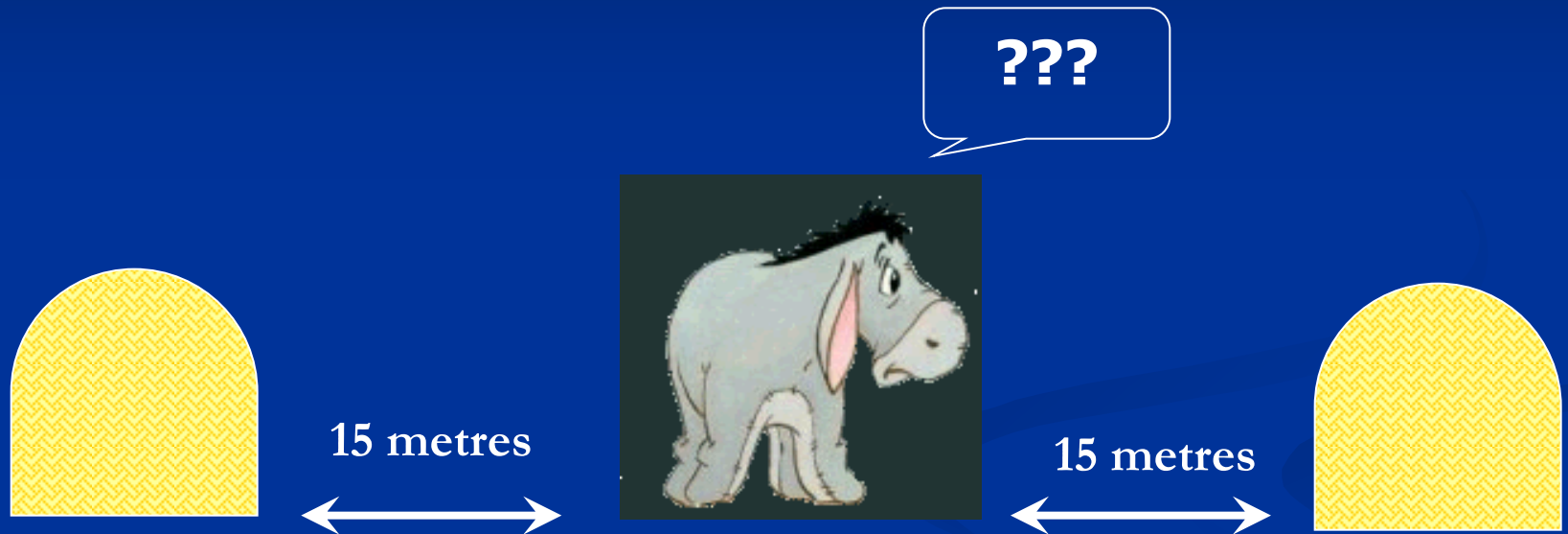
Further approaches to the utility theory

EXPRESSED PREFERENCES – refuses IC

i.e. Murray N. Rothbard: *„consumer expresses his/ her preferences at the moment of the decision (while shopping)“*

the donkey and 2 haycocks theorem – a donkey cannot pick one of the 2 equal haycocks... so it dies from hunger

What are the Eeyore's preferences?



similar to IC - both haycocks are the same quality (equal total utility), so which one will Eeyore chose?

Indifference curves characteristic

1. *IC have a negative slope* – in case of eligible goods, results from the insaturation axiom
2. *IC do not cross each other* – results from the transitivity axiom
3. *There is an IC in each spot of consumption situation*
4. *IC are convex to the axes origin* – results from the variety axiom – there are some exceptions (special shapes of IC)

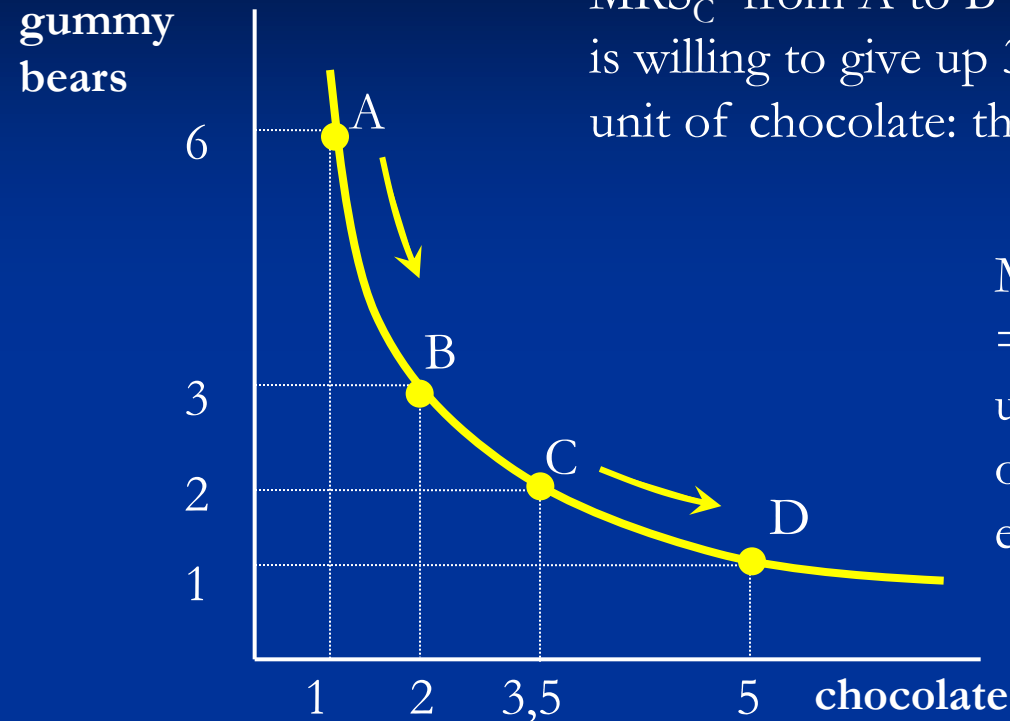
Marginal rate of substitution in consumption (MRS_C)

- = a ratio describing the consumer's WILLINGNESS to substitute goods with each other with constant level of total utility
- = a slope (tangent) of indifference curve...
- ... which generally changes alongside the IC
- $MRS_C = -\Delta Y / \Delta X = MU_X / MU_Y$ (for explicit changes) ...
- ... = $(\delta TU / \delta X) / (\delta TU / \delta Y)$ (for dimensionless changes)

MRS_C – Cobb-Douglas preferences

MRS_C from A to B = $-(6 - 3)/(2 - 1) = -3$, consumer is willing to give up 3 units of gummy bears to obtain 1 unit of chocolate: the ratio of substitution equals to 3:1

MRS_C from C to D = $-(2 - 1)/(5 - 3,5) = -2/3$, consumer is willing to give up 1 unit of gummy bears to obtain 1,5 units of chocolate: the ratio of substitution equals to 2:3

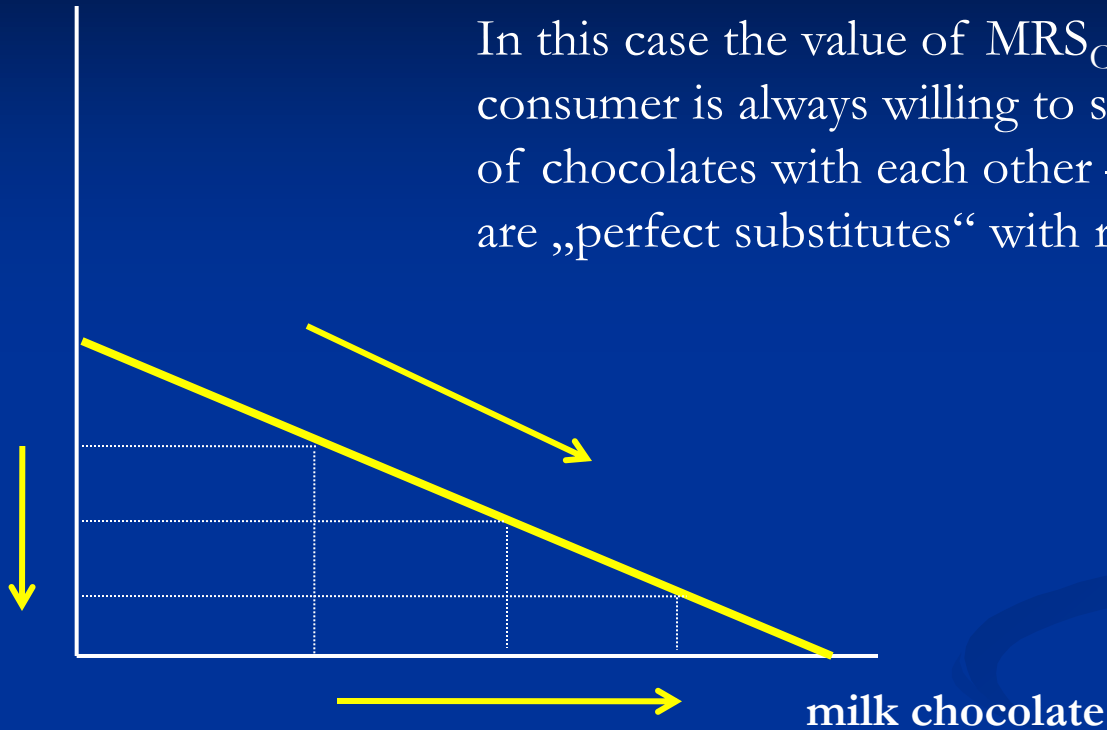


absolute value of MRS_C decreases because of the decrease of number of gummy bears (they become more precious), so the consumer is willing to give up less units of gummy bears to obtain additional unit of chocolate

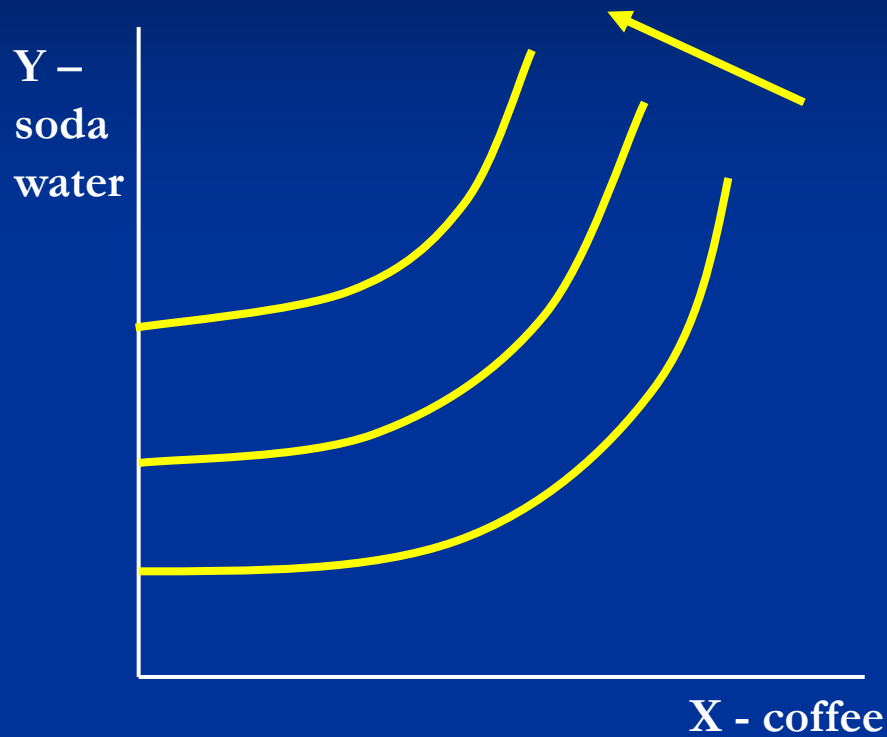
MRS_C – Linear preferences

white chocolate

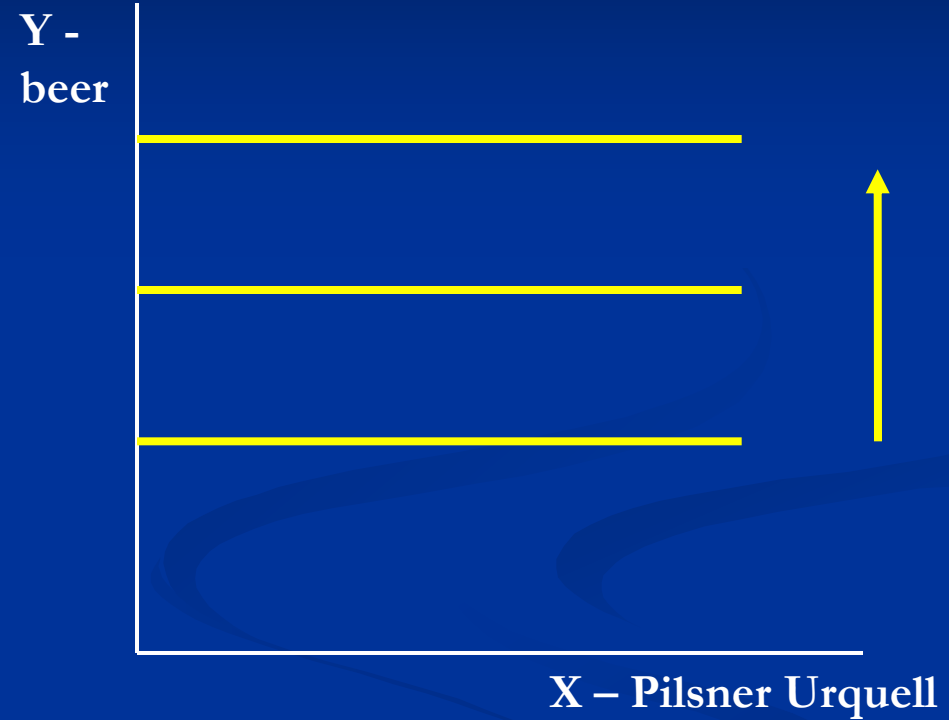
In this case the value of MRS_C is constant, because the consumer is always willing to substitute the same volume of chocolates with each other – both kinds of chocolates are „perfect substitutes“ with ratio 1:2, MRS_C = - 1/2



Special shapes of IC

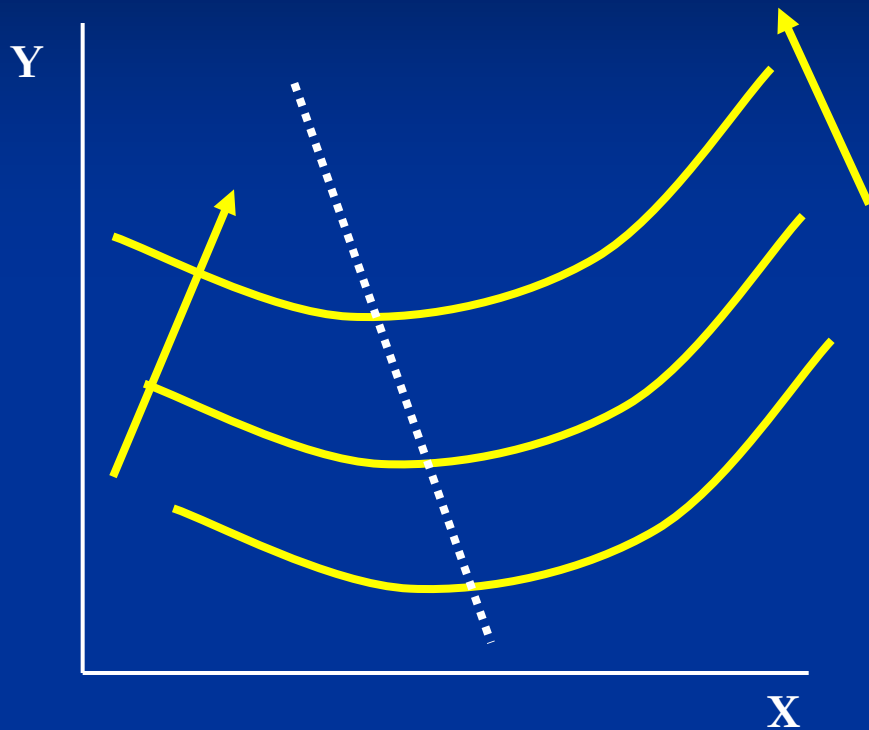


Coffee is an inferior good – you have to buy coffee if you want to buy soda water

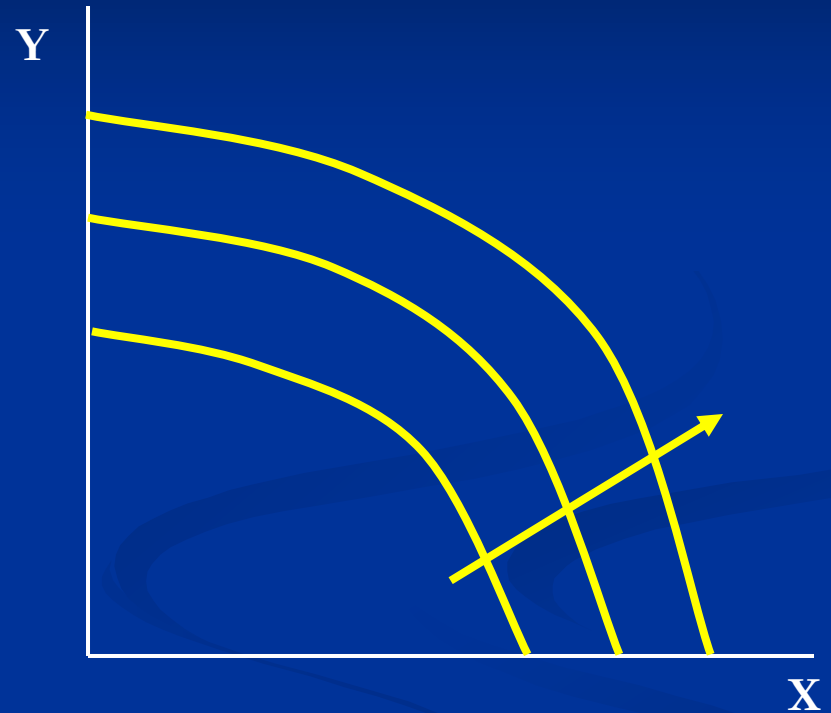


Pilsner Urquell is a neutral good – „I drink beer but I don't care about Pilsner Urquell“

Special shapes of IC

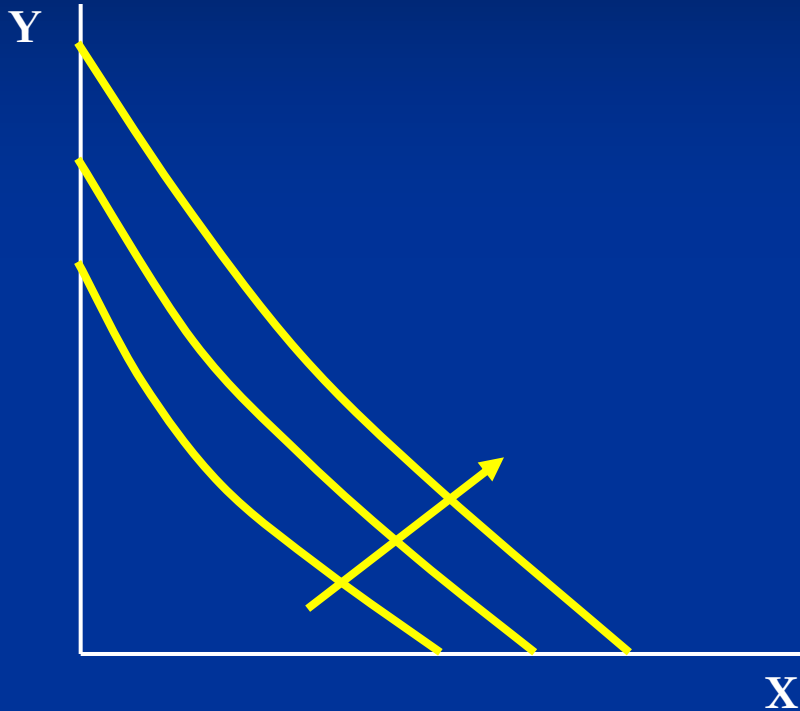


X changes from eligible to ineligible goods – „after the 10th beer I have a stomach ache“

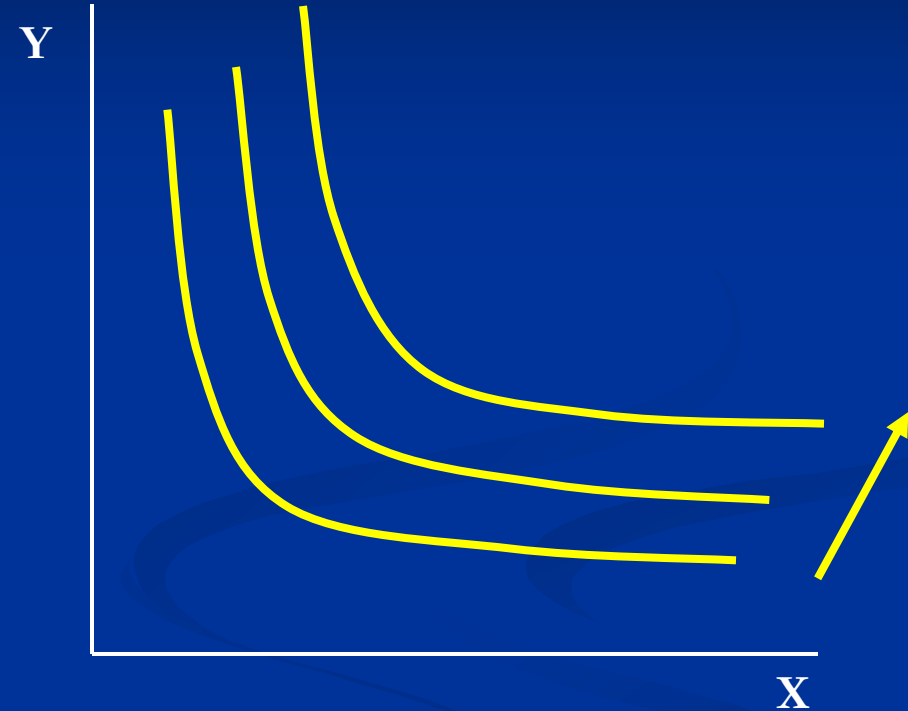


Specialization in consumption – it is possible to consume only one of the two goods – „I’ll spent my vacation either on Crete or Canary Islands“

Special shapes of IC

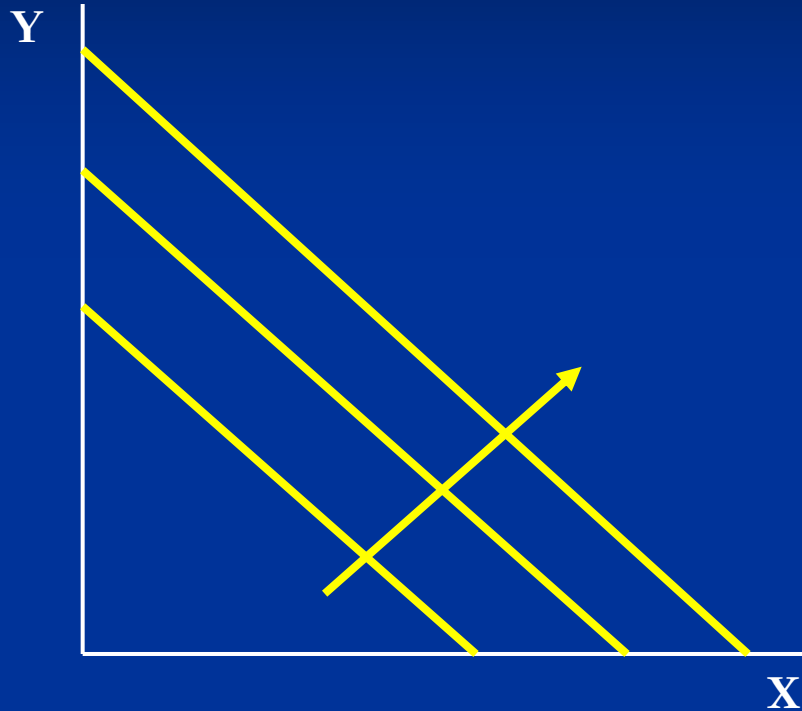


X and Y are close substitutes,
i.e.: croissants-bread, vanilla
ice-chocolate ice

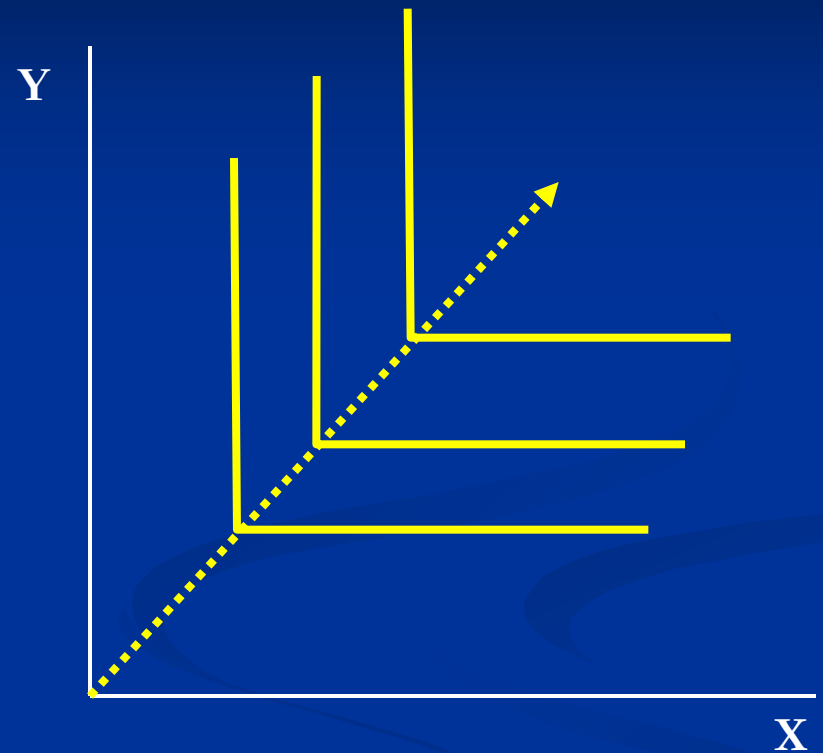


X and Y are regular
complements, i.e.: car-gasoline,
bread-butter

Special shapes of IC

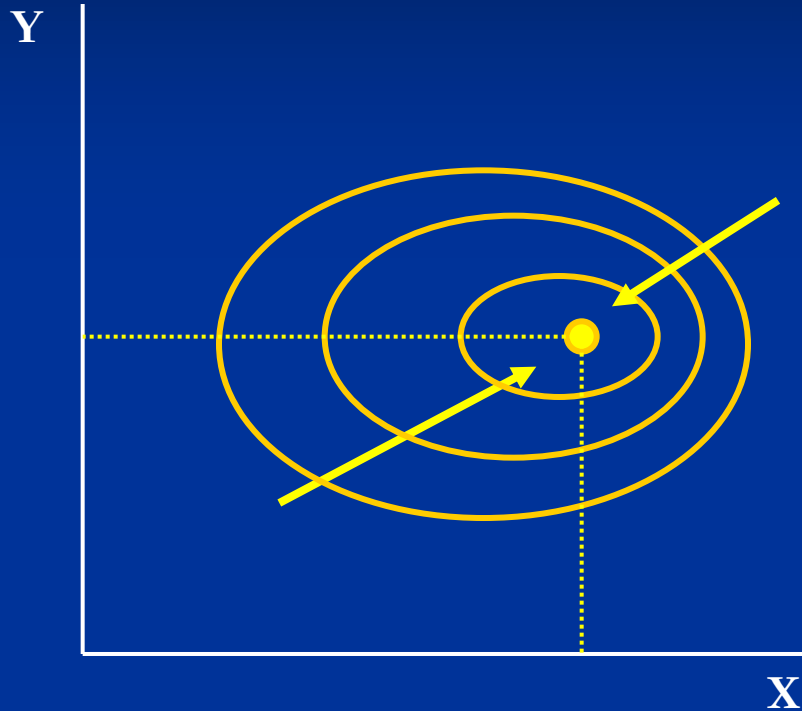


X and Y are perfect substitutes, i.e.: Coca-cola - Pepsi, Nescafé-Tchibo etc.

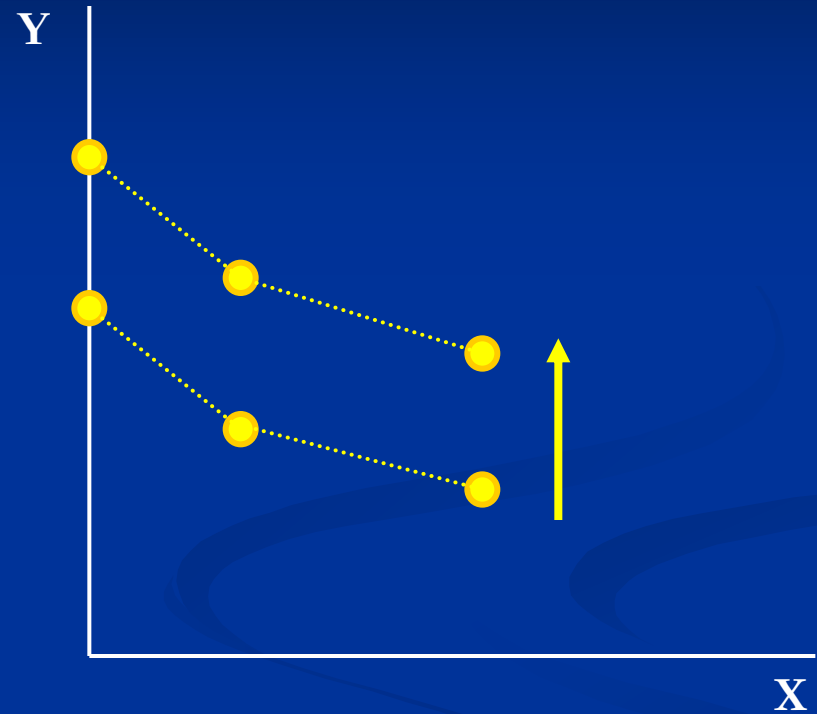


X and Y are perfect complements – objective: skis-ski bindings, subjective: „I drink each cup of coffee with two sugars“

Special shapes of IC



Saturated preferences – consumer endeavours the specific combination of two goods (commodity cage)



Discrete goods – obtainable only in solid units (i.e. you cannot buy only a half of cinema ticket)

Consumer's limits (possibilities)

- IC represent the consumer's WILLINGNESS to a specific action (shopping, consumption etc.)
- goods and services are usually not free
- the consumer has to undergo a sacrifice to get the utility
- the consumer's possibilities are limited
- consumer is limited with his/her:: disposable income (I) and prices of goods and services (P) → **budget constraint**

Budget constraint

Equation of budget constraint (budget line – BL):

$$I = P_X \cdot X + P_Y \cdot Y$$

or:

RESOURCES = USE OF RESOURCES

consumer spends his/her entire disposable income, or, if he/she saves, the savings are one of the „bought“ goods

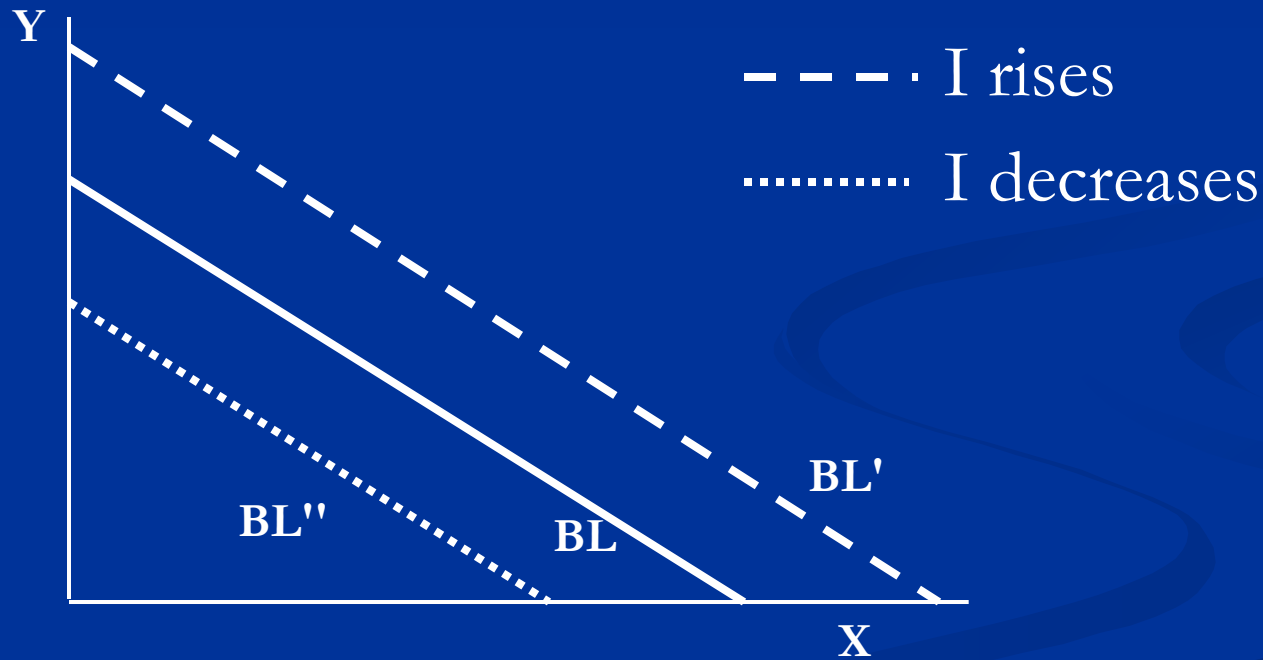


Budget Line

- frontier that defines the „commodity space“ (lies on + under the budget line)
- set of accessible combinations of goods and services
- we are interested in its: **distance from the origin, slope, shape**

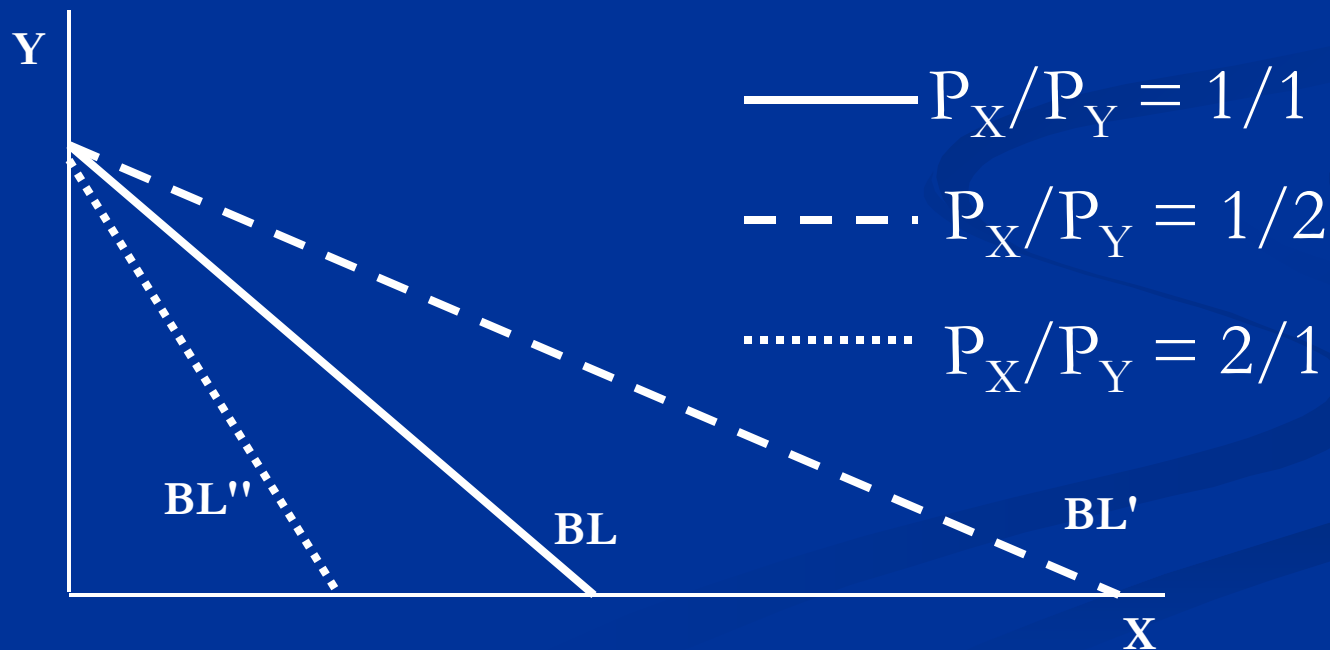
Distance from the origin of axes

- if disposable income rises, BL moves rightwards, if decreases, BL moves leftwards



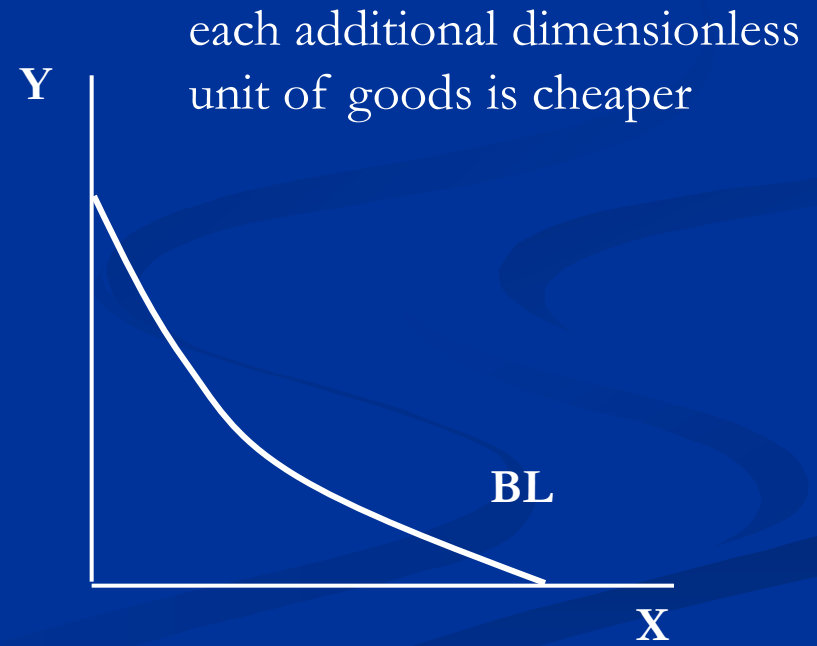
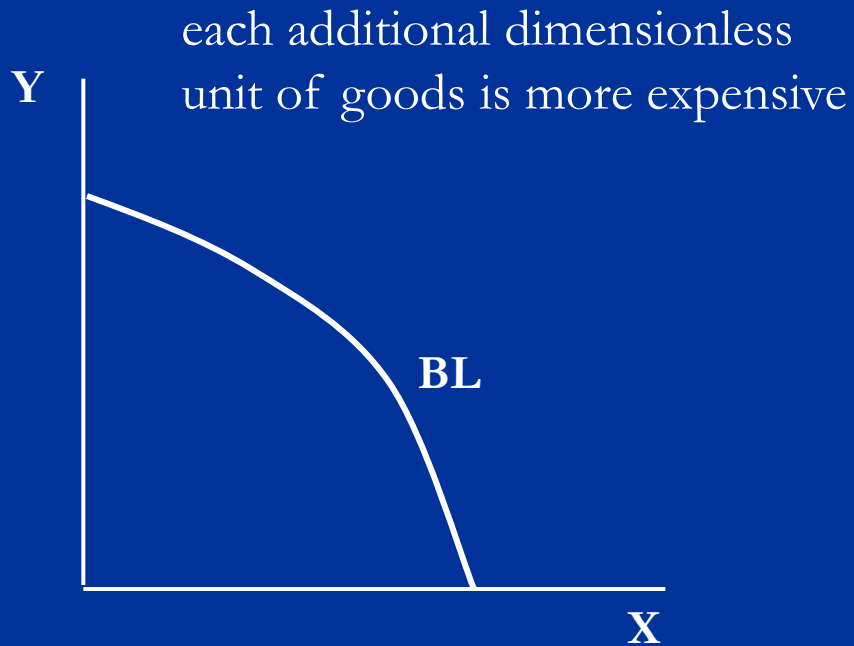
The slope of BL

- *Marginal Rate of Substitution in Exchange* (MRS_E)
- = ratio describing the possibility to change goods with each other on the market – tells us what are the relative prices of goods
- $MRS_E = - \Delta X / \Delta Y = P_X / P_Y$

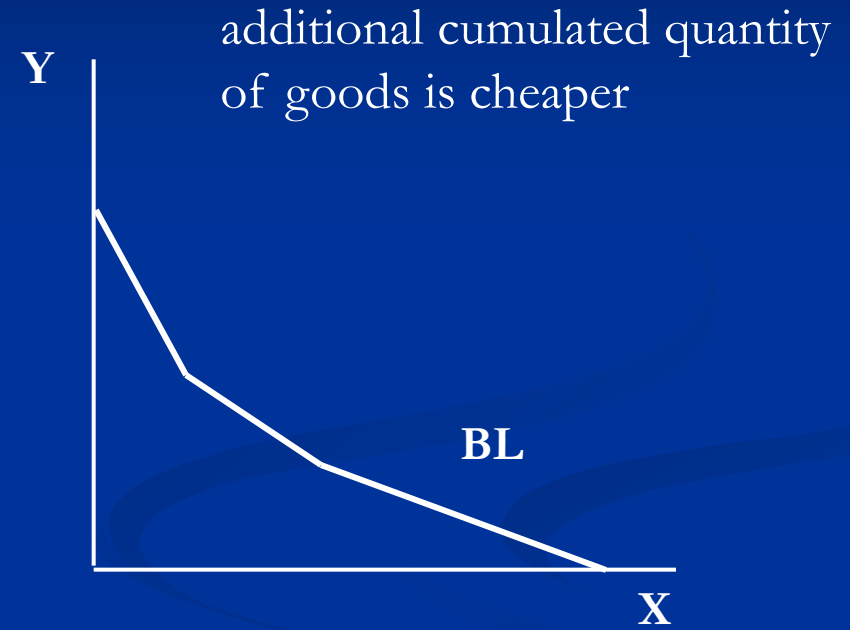
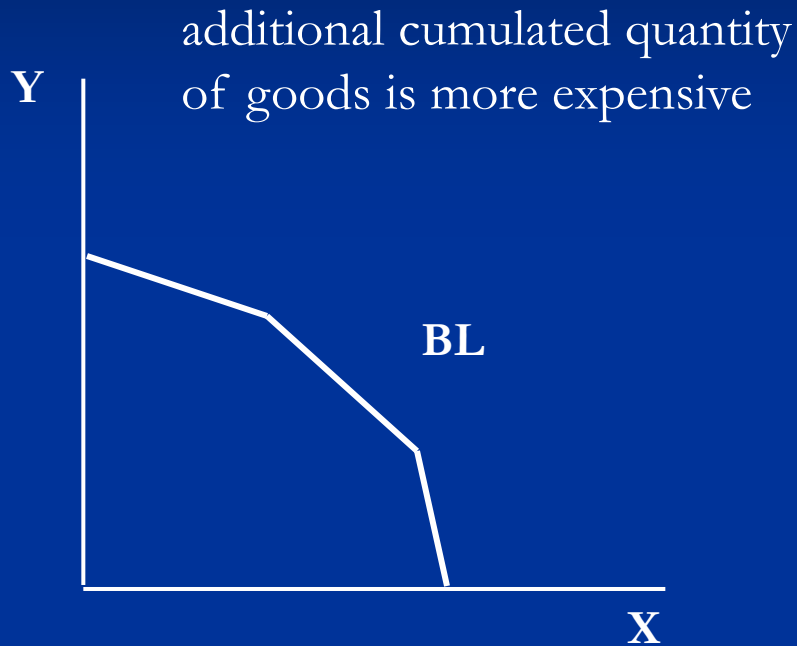


The shape of BL

Tells us if the relative prices of goods change with the change of bought volume



The shape of BL



Budget constraint

... Is also affected with:

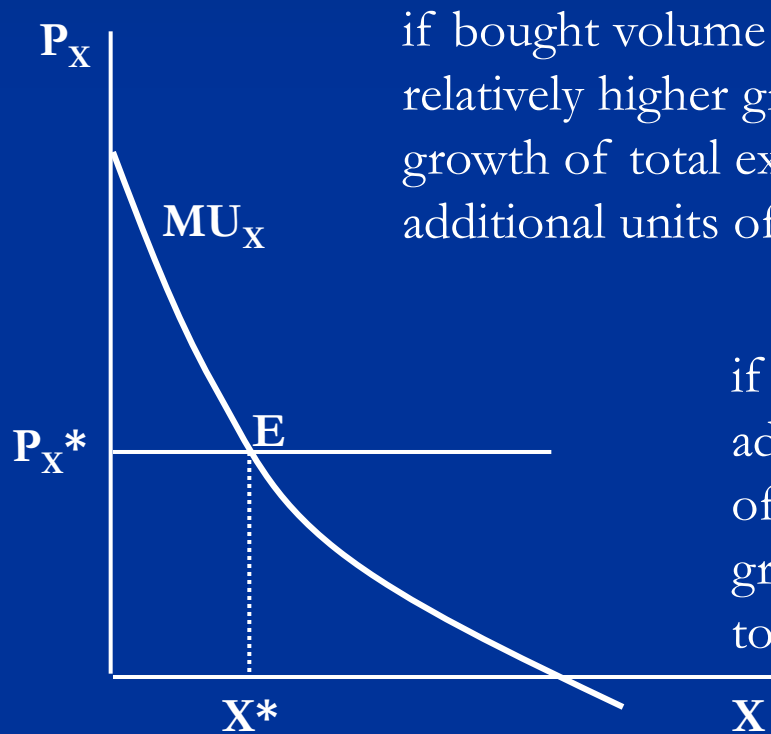
- taxation (consumption and income taxes)
- social system
- other regulation (price reg., allowance system, etc.)

Consumer's equilibrium

Consumer is in equilibrium if he/she maximizes his/her total utility according to his/her preferences and possibilities (disposable income and goods prices)

Consumer's equilibrium – case of sole goods or service

For equilibrium stands: $MU_X = P_X$



if bought volume less than X^* , then additional units cause relatively higher growth of total utility in comparison to the growth of total expenditures ($MU > P$) – motivation to buy additional units of X

if bought volume more than X^* , then additional units cause relatively higher growth of total expenditures in comparison to the growth of total utility ($MU < P$) – motivation to decrease his/her consumption of X

E: no impulse for any change, E represents the consumer's equilibrium

Consumer's equilibrium – case of two kinds of goods or services

For the equilibrium stands (generally):

$$MRS_C = MRS_E$$

or:

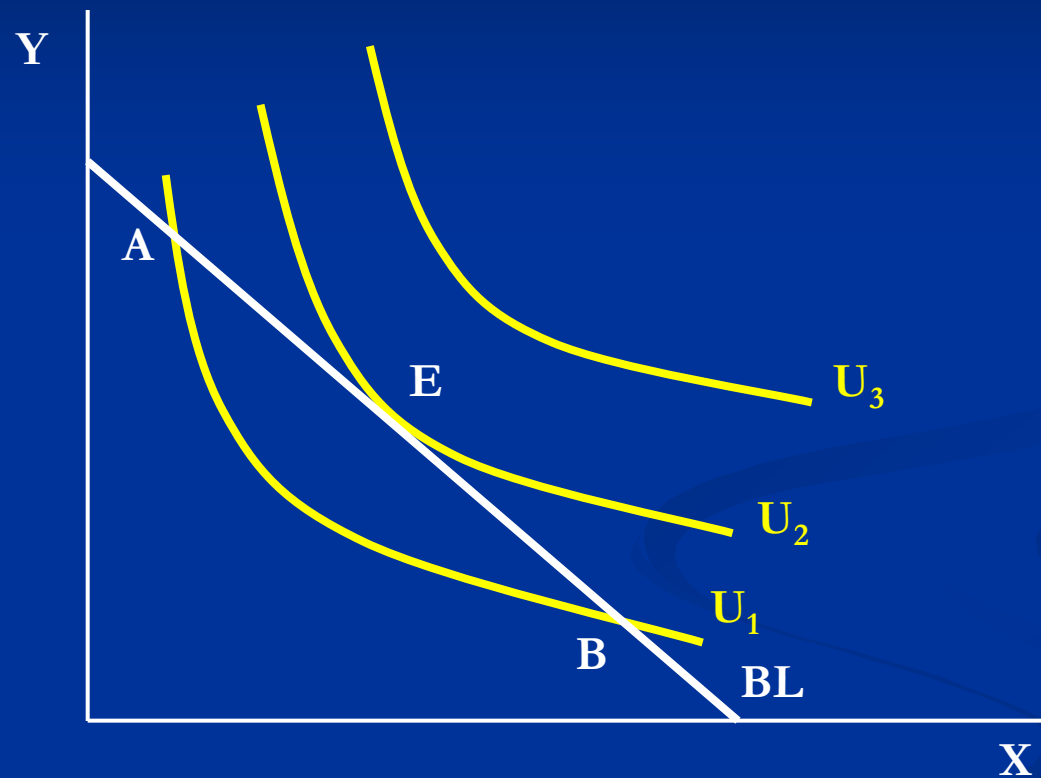
$$MU_X/MU_Y = P_X/P_Y$$

so:

Consumer's equilibrium occurs if IC tangents the BL

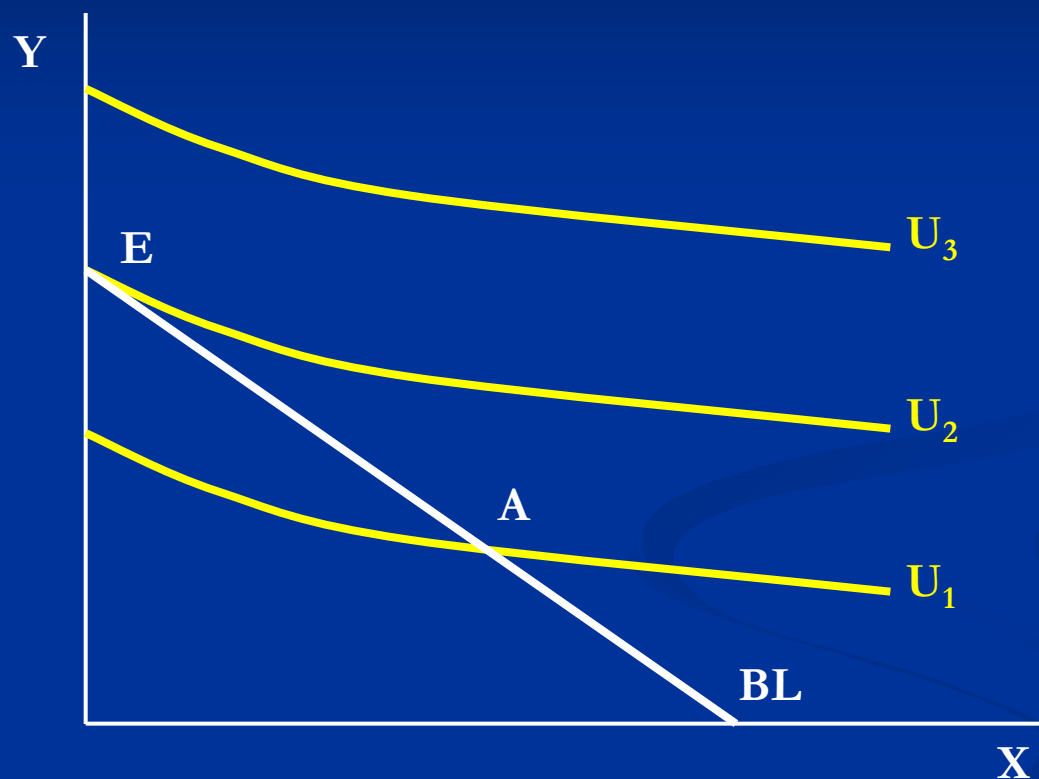
(Usually, but not in all cases!!!)

Consumer's equilibrium – inner equilibrium



Consumer's equilibrium in E. A and B are accessible, but not maximizing the total utility. Level of total utility U_3 is not accessible.

Consumer's equilibrium – corner equilibrium

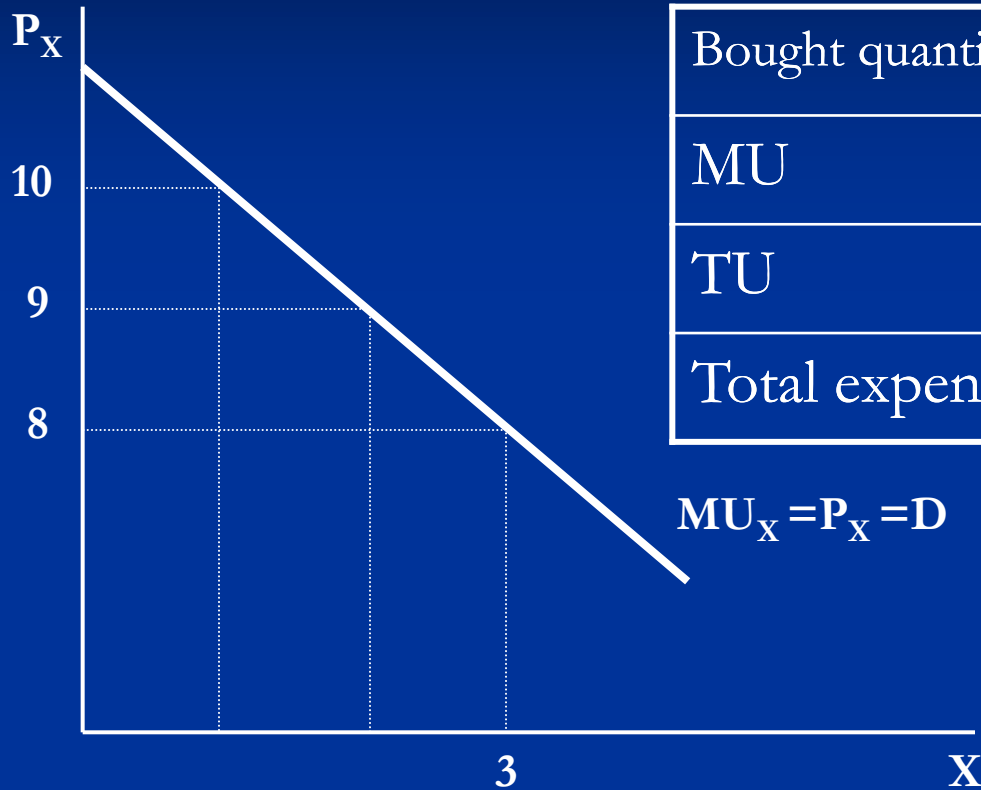


Consumer's equilibrium in E. A is accessible, but not maximizing the total utility. Level of total utility U_3 is not accessible. **IN THIS CASE MRS_C DOES NOT EQUAL TO MRS_E !!! $MRS_E > MRS_C$ - BL steeper than IC**

Consumer's surplus

- a difference between the total utility acquired from the consumption and the total expenditures spent to acquire the equilibrium volume of goods and services, or...
- ...a difference between the willingness to spend and the necessity to spend some part of the disposable income
- $CS \text{ (Consumer's Surplus)} = TU - P_X \cdot X$

Consumer's surplus



Bought quantity	1	2	3
MU	10	9	8
TU	10	19	27
Total expenditures	10	18	24

Consumer's surplus of equilibrium quantity of X:

$$CS = TU - P_X \cdot X = 27 - 24 = 3$$