Intermediate Microeconomics

Agribusiness Teaching Center

Easter Term 2015

Logistics

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- Home-page: http://home.cerge-ei.cz/gurgen/teaching/Micro.html

- Place: ATC, Room B
- Time: Monday 10:00-11:50am
  Saturday 10:00-11:50am
- Office Hours: *After class*

Course Description and Objectives

- ***Course Description***

  This module covers an intermediate-level course in Microeconomic theory. It concentrates on formalizing and applying the concepts introduced in the principles (Agricultural Economics) course. The module begins with studying theories of the consumer and the producer. Next, we will combine both theories to individual markets, including perfect competition, monopoly, and oligopoly. The module will end with an analysis of the efficiency of competitive markets and the cases when the competitive markets may fail (e.g. asymmetric information, externalities, etc.).

- ***Course Objective***

  The objective of this course is to convey intermediate concepts of microeconomic theory to students developing their analytical thinking skills. *The emphasis of this course is on reasoning and understanding, not memorising.* It is best seen as a course that provides the foundations of economic analysis and thereby opens the door to other economics courses, both applied and theoretical.

Text

- Nicholson, W. & Snyder, C. (2010)

  Theory and Applications of Intermediate Microeconomics.
  Main Textbook. A edition can also be used.

- Perloff, J.M. (2007). *Microeconomics* (Almost an alternative to the main text)
- Frank, R.H. (2007). *Microeconomics and Behavior.* (Provides good intuition for most of the topics)
- Schotter, A. (2003). *Microeconomics: A Modern Approach.* (Game theoretic approach, advanced text)
- Binger, B. R., & Hoffman, E. (1998). *Microeconomics with Calculus.* (For advanced students)

Grading

- ***Final Mark***

Quizzes	25%
Small Projects	10%
Participation/Attendance	5%
Midterm	30%
Final Exam	30%

- ***Academic Integrity***

All students that violate the academic honesty code will receive a failing grade. Academic honesty includes *receiving and/or providing unauthorized help* from/to other students.

Course Outline

1. Introduction
2. Preferences and utility
3. Demand curves and exchange equilibrium
4. Production, Costs and Profit maximisation
5. Supply
6. Perfect competition
7. General Equilibrium and Efficiency
8. Uncertainty and Game Theory
9. Monopoly
10. Oligopoly
11. Input Markets and Value of Time
12. Externalities and Public Good
13. Asymmetric information

Roughly follows week order. Changes will be announced.

Microeconomics

Trees or Forest?

Microeconomics

Methodology!

Economics is the study of mankind in the ordinary business of life...

- Alfred Marshall

Münchhausen Trilemma (Epistemology)

- Circular proof (argument)
- Proving the proof (ad infinitum)
- Axiomatic proof (foundationalism)

- Fallibilism
  - Inability to disprove

- Pyrrhonism

Economic Modelling

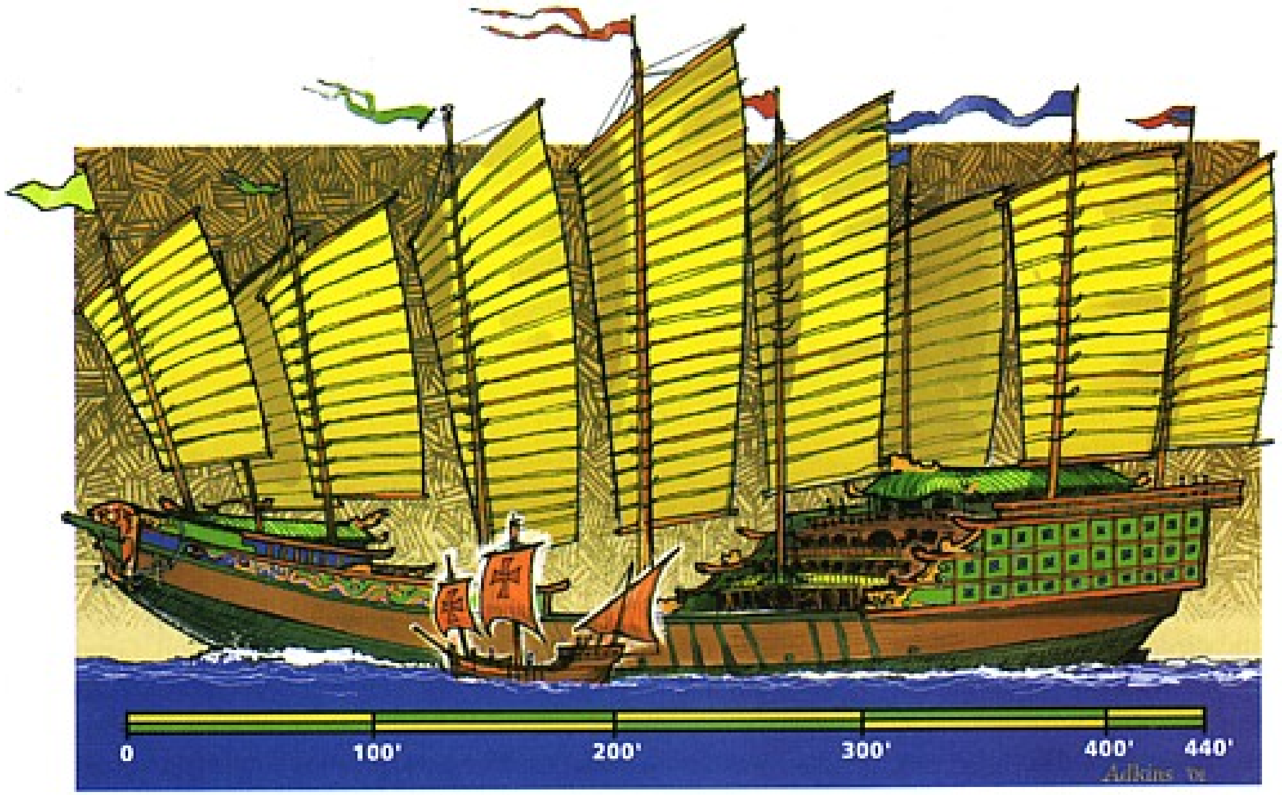
- Assumptions
- Abstraction
- Mathematical base
- Math proof and conclusion

- Comparative statics
- Ceteris paribus

Thinking like an economist

- Cost benefit analysis
  - Reservation wage
- Opportunity costs

Thinking like an economist



Zheng He *v* Columbus

Why Europe (and not China) colonised the world?

Formal Microeconomics

- Consumer theory
  - People
  - Households
  - Applications

- Producer theory
  - Internal organisation
  - Industrial organisation

- Equilibrium
  - Existence
  - Efficiency

Microeconometrics, behavioural econometrics, experimental economics

Consumer Theory

PEOPLE CHOOSE THE BEST THINGS THEY CAN AFFORD

Consumer Theory

PEOPLE CHOOSE THE <u>BEST THINGS</u> THEY CAN AFFORD

Neoclassical Theory of Consumption

THE *BEST THINGS*:

Definition

Consumtion bundle is a complete list of the goods & services that are involved in the choice problem that is investigated. (say, X and Y).

Fact

Notation:

Strict preference: $X \succ Y$

Indifference: $X \sim Y$

Alternative notation:

Weak preference: $X \succeq Y$

Neoclassical Theory of Consumption

Relationship between $\succ$, $\sim$, and $\succeq$

Lemma

if $X \succeq Y$ *and* $Y \succeq X$ *then* ?

if $X \succeq Y$ *but not* $Y \succeq X$ *then* ?

Neoclassical Theory of Consumption

The human or *homo economicus*

- The economic agent
  - Rational
  - Egoistic (self-interested)

Neoclassical Theory of Consumption

Axiom

1^{st} *Axiom: Complete preferences*

Either of	$X \succ Y$		*Either of*	$X \succeq Y$
	$Y \succ X$	$\lvert or \rvert$		$Y \succeq X$
	$X \sim Y$			*both*

Example

Buridan's ass...

2^{nd} *Axiom: Reflexive preferences*

$X \sim X$ $\quad \lvert or \rvert \quad$ $X \succeq X$

Neoclassical Theory of Consumption

Axiom

3rd Axiom: Transitive preferences

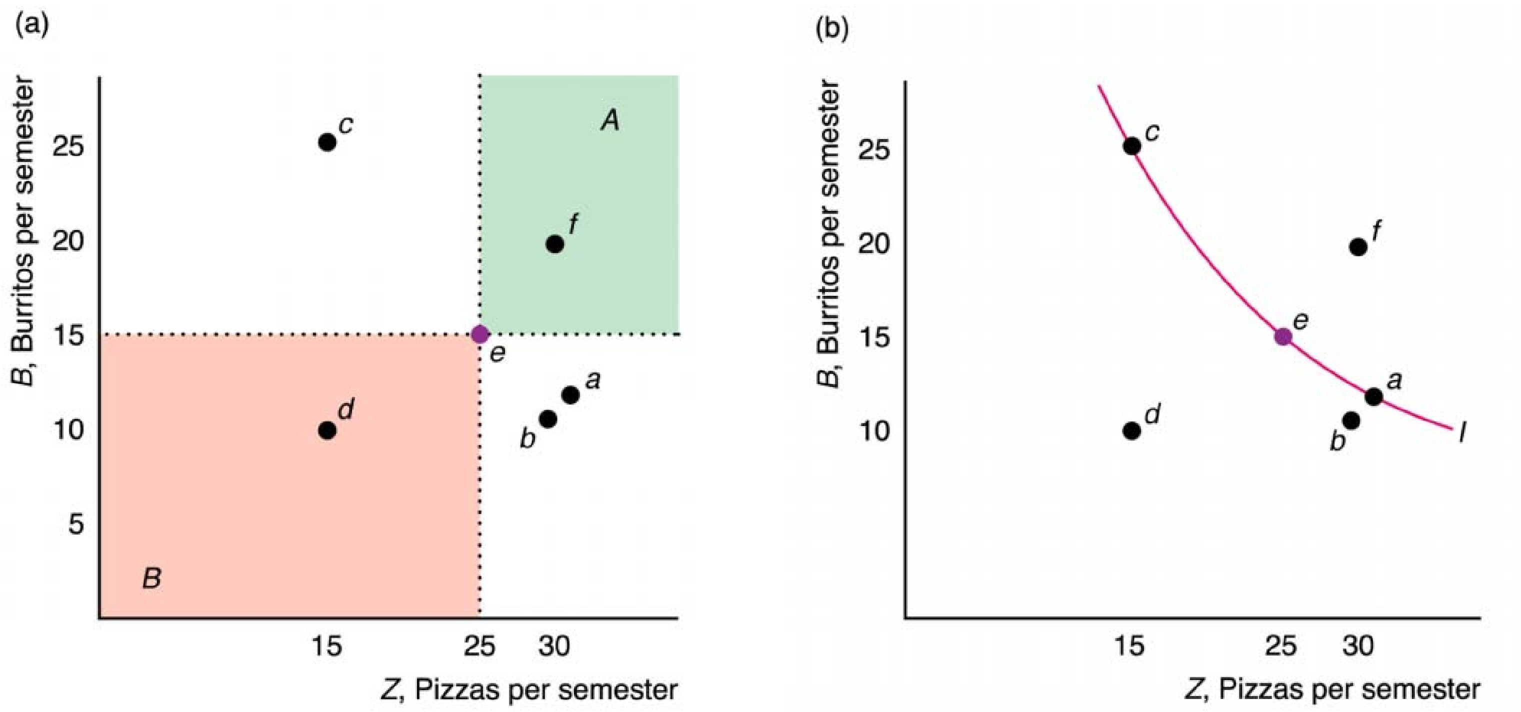
- *If* $X \succ Y$ *and* $Y \succ Z$ *then* $X \succ Z$
- *If* $X \sim Y$ *and* $Y \sim Z$ *then* $X \sim Z$

  or
- *If* $X \succeq Y$ *and* $Y \succeq Z$ *then* $X \succeq Z$

Example

The Dutch-booking...

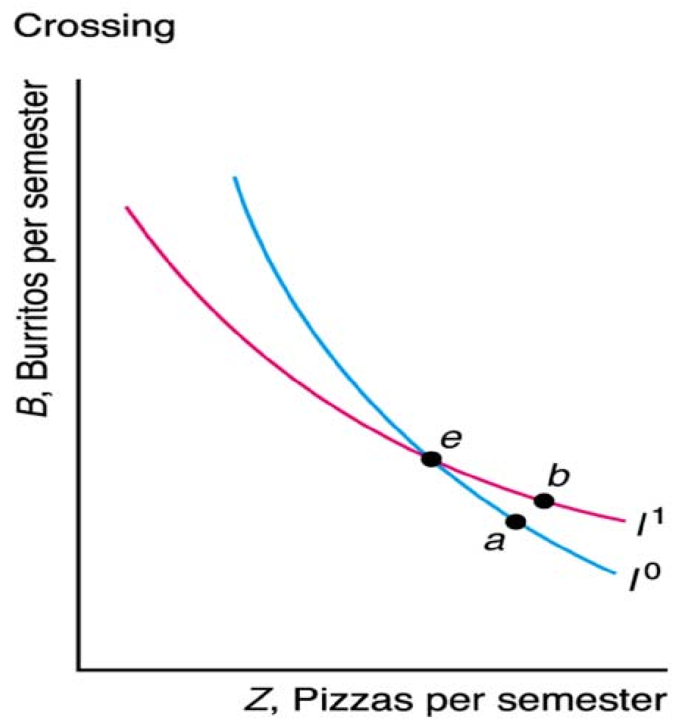
Rationality assumptions and *Indifference Curves*

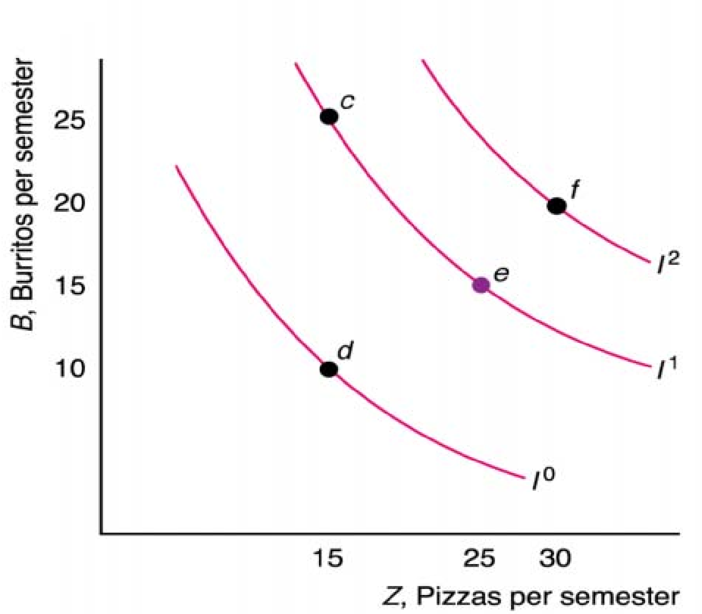


$e = (15, 25)$
$d = (10, 15)$

$e \sim c \sim a$
I^1 ~indifferece curve

Indifference curves

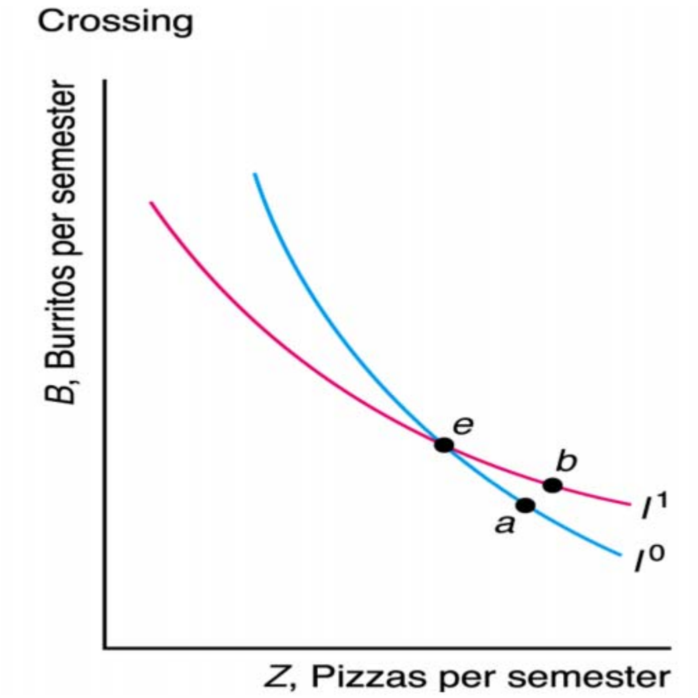




$I^0 : a \sim e$
$I^1 : b \sim e$
Q : Do the axioms hold?

Question :
(a) $I^0 \sim I^1 \sim I^2$;
(b) $I^0 \succ I^1 \succ I^2$; or
(c) $I^2 \succ I^1 \succ I^0$

Indifference curves



Proposition

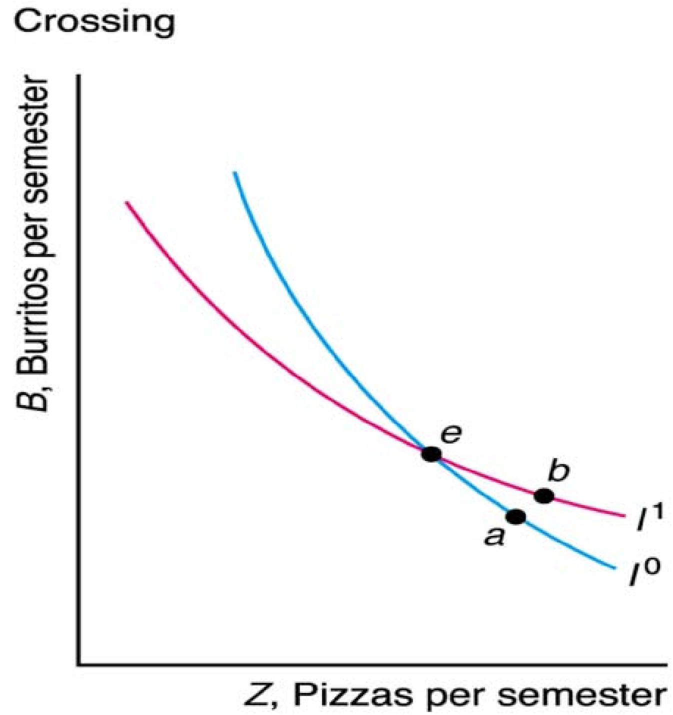
Indifference curves representing distinct levels of preference cannot cross.

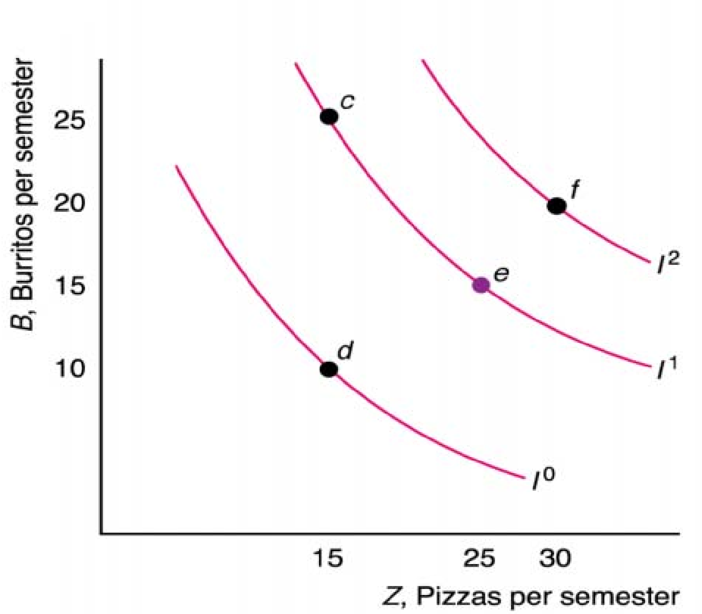
Proof.

Otherwise the transitivity axiom is violated. □

$I^0 : a \sim e$
$I^1 : b \sim e$
Q : Do the axioms hold?

Indifference curves





$I^0 : a \sim e$

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Q : Do the axioms hold?

Question :

(a) $I^0 \sim I^1 \sim I^2$;

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(c) $I^2 \succ I^1 \succ I^0$

Indifference curves

PSYCH. ASSUMPTIONS

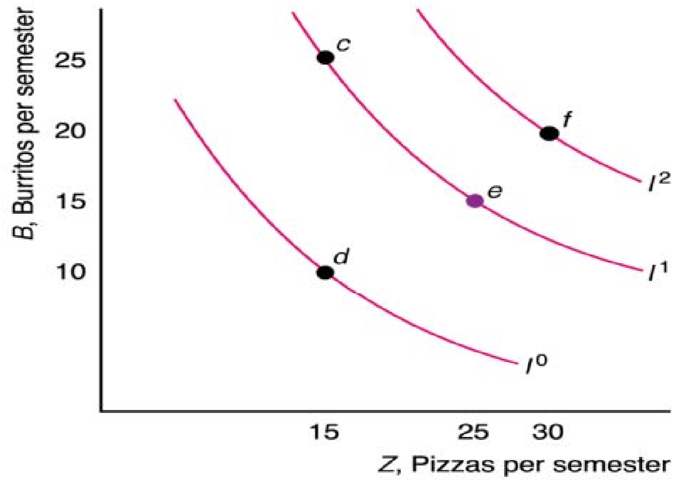
Axiom

4^{th} *Axiom: Insatiable (monotonic) preferences*

- *If* $X \gg Y$ *then* $X \succ Y$
- *If* $X > Y$ *then* $X \succeq Y$

5^{th} *Axiom: Convex preferences*

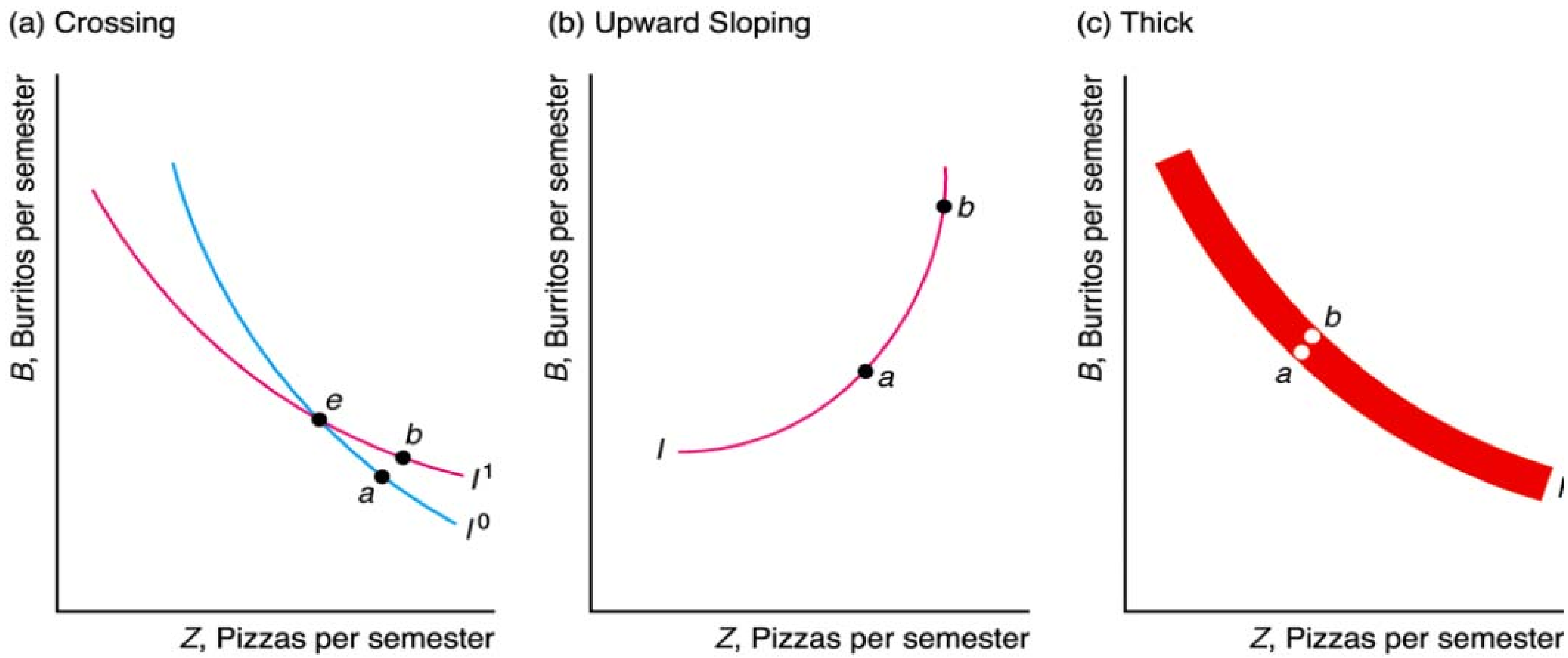
- *(w) If* $X \sim Y$ *then* $\alpha X + (1-\alpha) Y \succeq X$ *where* $\alpha \in (0,1)$
- *(s) If* $X \sim Y$ *then* $\alpha X + (1-\alpha) Y \succ X$



Question :
(a) $I^0 \sim I^1 \sim I^2$;
(b) $I^0 \succ I^1 \succ I^2$; or
(c) $I^2 \succ I^1 \succ I^0$

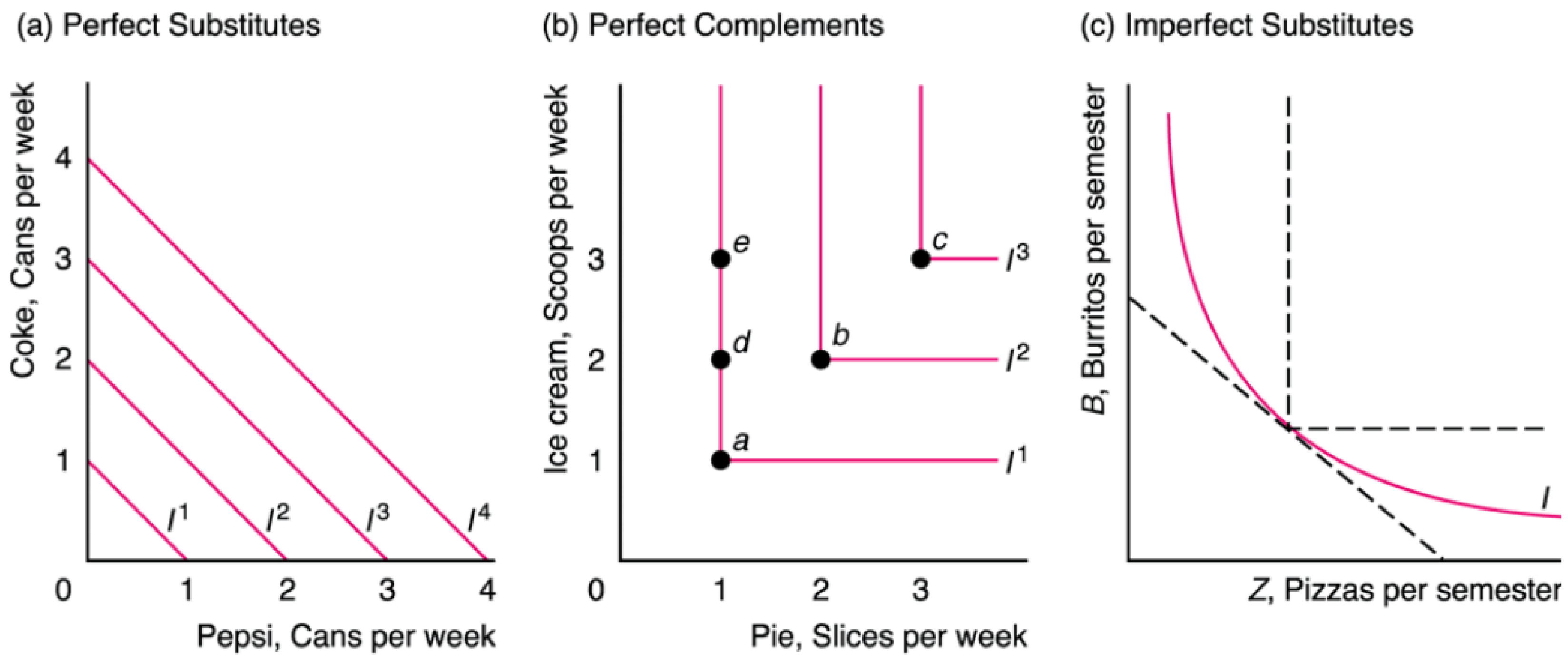
Indifference curves

‘No-No-No’ cases

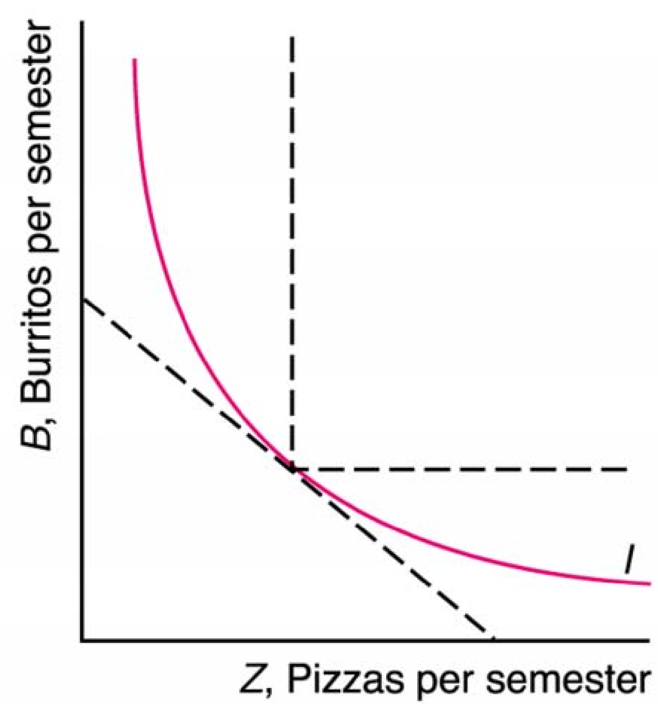


Indifference curves

Special cases



Marginal Rate of Substitution



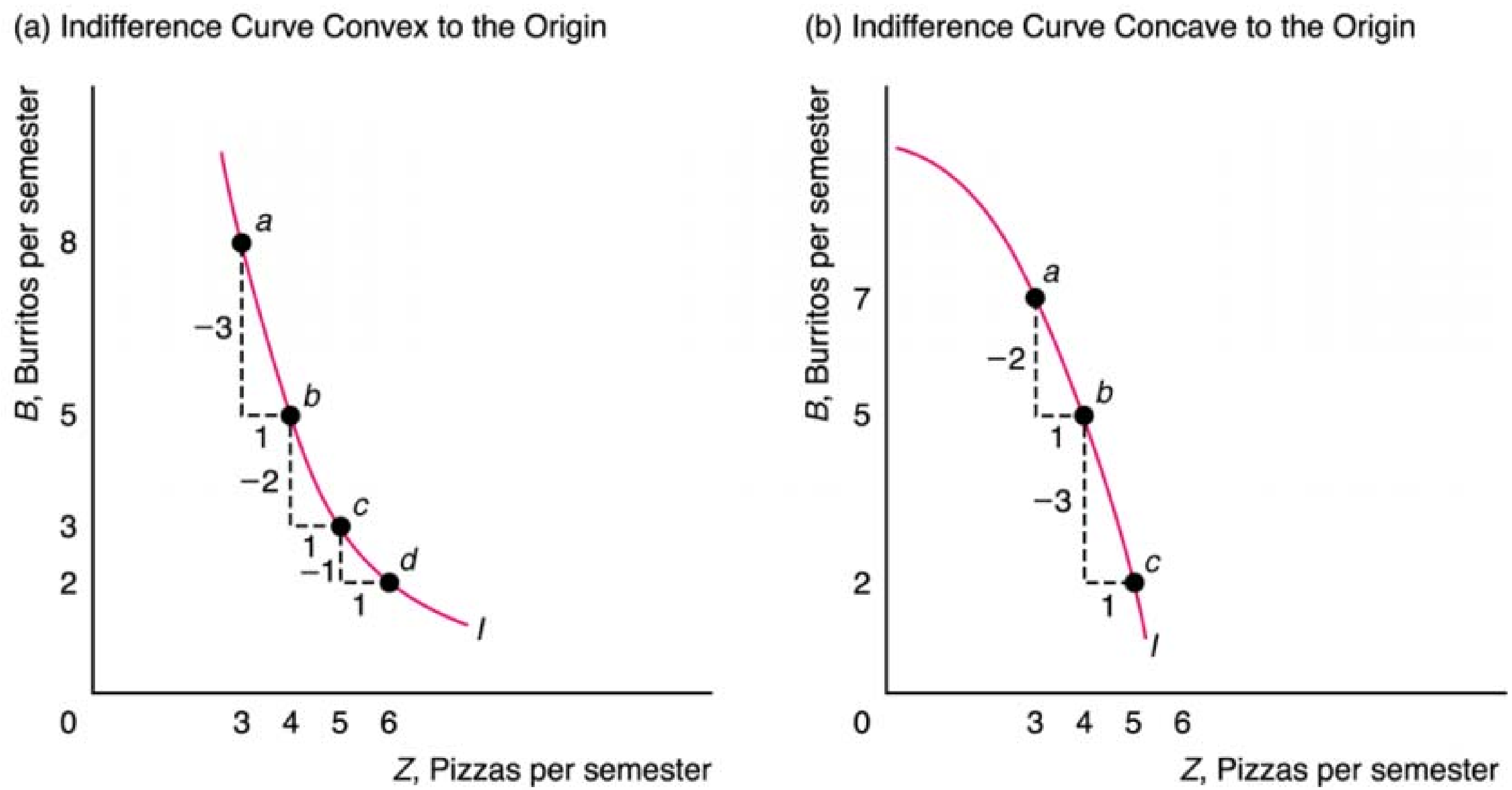
Definition

Marginal rate of substitution (MRS) is the rate at which the consumer is just willing to substitute one good for the other

- MRS is the (absolute of the) slope of an indifference curve at a particular point:

$$\frac{\Delta x_2}{\Delta x_1} \text{ or } \frac{dx_2}{dx_1}$$

Diminishing Marginal Rate of Substitution



Utility

- measure of happiness
- cardinal utility
- ordinal utility

Definition

Utility function: A way of assigning a number to every possible consumption bundle, such taht more preferred bundles get assigned larger numbers.

Theorem of Debreu

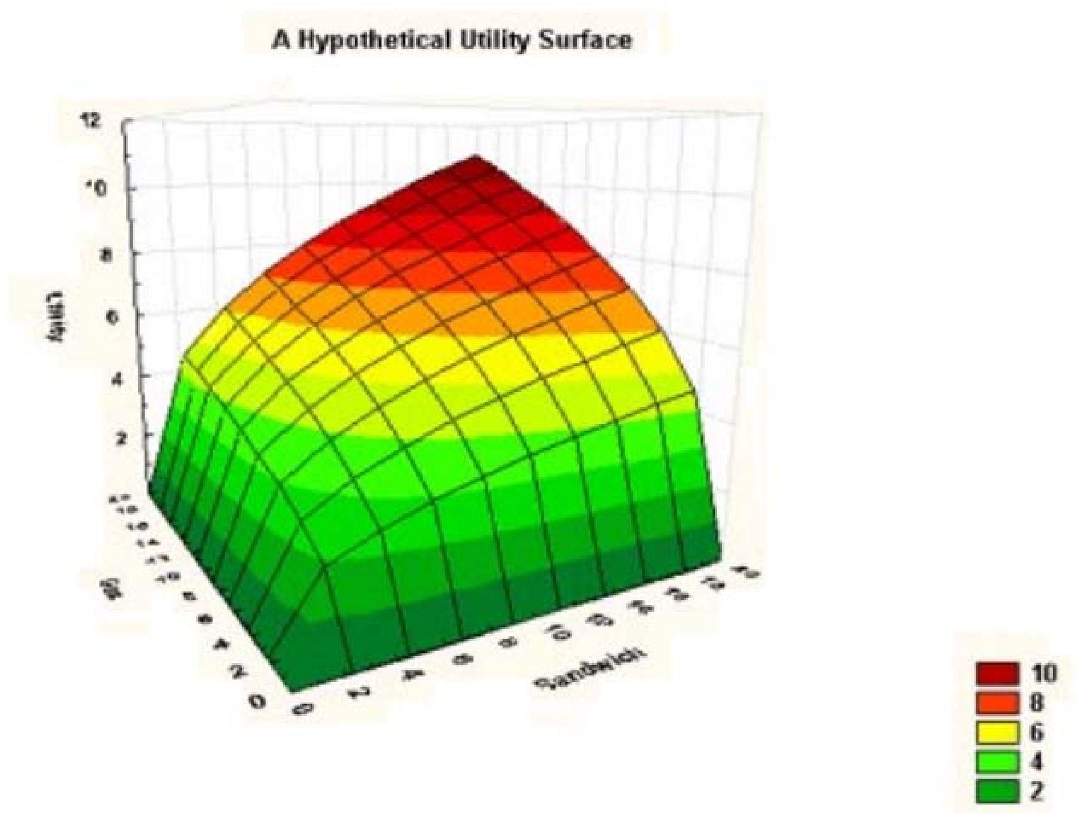
Theorem

Given the assumptions of Rationality and Monotonicity,
$\exists u(\bullet) \quad s.t. \quad (x_1, x_2) \succ (y_1, y_2) \iff u(x_1, x_2) > u(y_1, y_2).$

Proof.

Do not need for this course. □

Utility function and Indifference curves



Monotonic transformation

Lemma

Any monotonic transformation of the original utility function is a utility function representing the same preferences.

Proof.

1. Suppose $u(\bullet)$ is the utility function representing the preferences $\succ_P$.

$$(x_1, x_2) \succ_P (y_1, y_2) \iff u(x_1, x_2) > u(y_1, y_2) \tag{1}$$

2. And suppose that $f(u)$ is a monotonic transformation of $u(\bullet)$.

$$u(x_1, x_2) > u(y_1, y_2) \iff f(x_1, x_2) > f(y_1, y_2) \tag{2}$$

3. From (1) and (2) follows:

$$(x_1, x_2) \succ_P (y_1, y_2) \iff f(x_1, x_2) > f(y_1, y_2) \tag{3}$$