Neoclassical Theory of Consumption

Economics II: Microeconomics

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- Consumers:
  - People.
  - Households.
  - Applications.
- Firms:
  - Internal Organisation.
  - Industrial Organisation.
- Equilibrium:
  - Holds.
  - Does not hold.

Microeconomics

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Neoclassical theory of consumption

Basics

PEOPLE CHOOSE THE BEST THINGS THEY CAN AFFORD.

Neoclassical theory of consumption

Basics

PEOPLE CHOOSE THE *BEST THINGS* THEY CAN AFFORD.

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: $X \succeq Y$

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* ?

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

Lemma

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

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

Neoclassical theory of consumption

Homo-economicus

- The economic agent (or economic human)

Neoclassical theory of consumption

Homo-economicus

- The economic agent (or economic human)
  - Rational

Neoclassical theory of consumption

Homo-economicus

- The economic agent (or economic human)
  - Rational
  - Egoist (or self-interested)

Axiom

1^{st} *Axiom: Complete preferences*

Either of $X \succ Y$, $Y \succ X$, $X \sim Y$ |*or*| *Either of* $X \succeq Y$, $Y \succeq X$, *both*

Example

Buridan's ass...

2^{nd} *Axiom: Reflexive preferences*

$X \sim X$ |*or*| $X \succeq X$

Axiom

3^{rd} *Axiom: Transitive preferences*

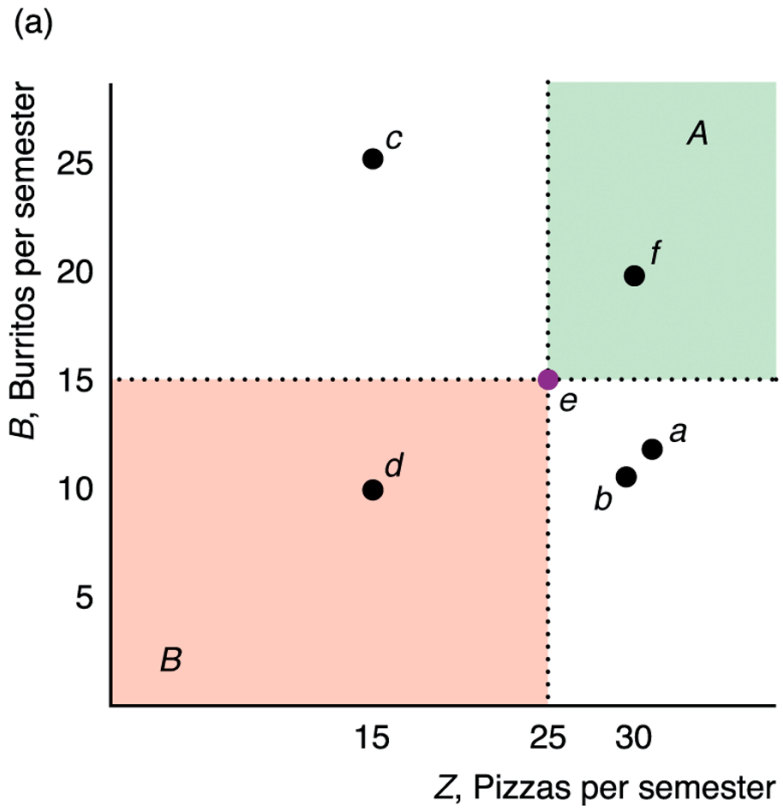
- *If* $X \succ Y$ *and* $Y \succ Z$ *then* $X \succ Z$
- *If* $X \sim Y$ *and* $Y \sim Z$ *then* $X \sim Z$

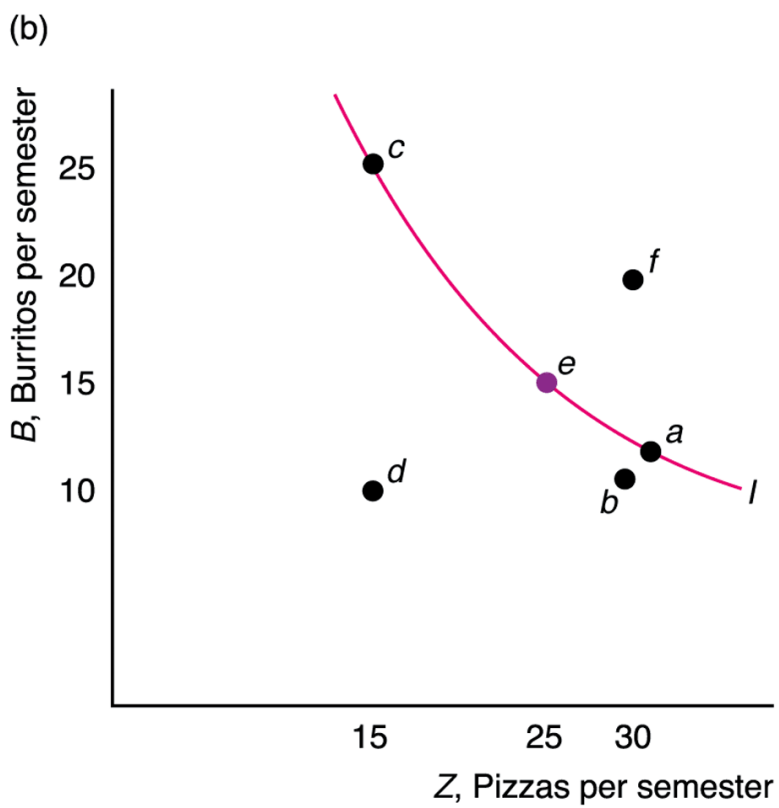
  or
- *If* $X \succeq Y$ *and* $Y \succeq Z$ *then* $X \succeq Z$

Example

The Dutch-booking...

Indifference curves

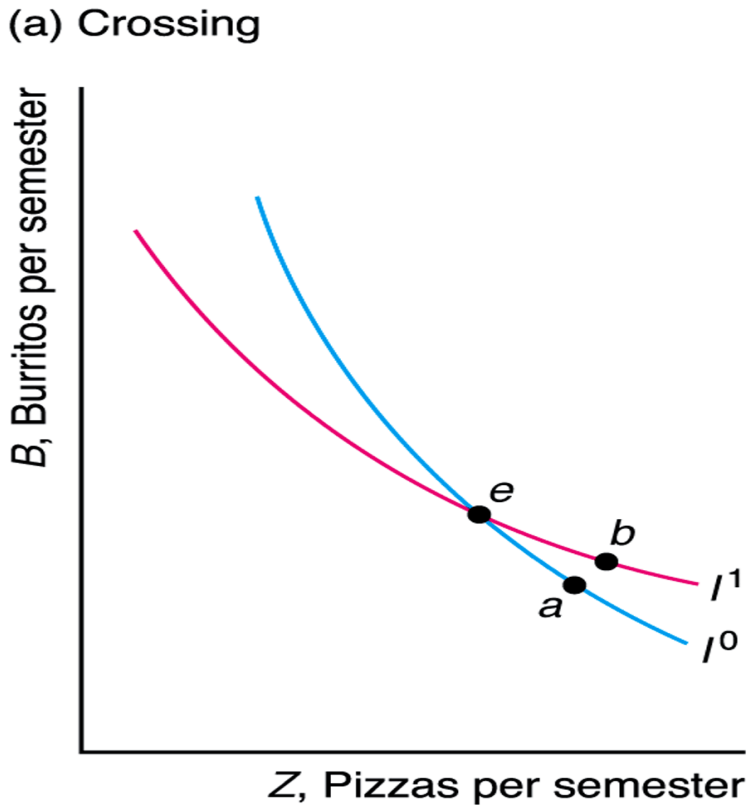


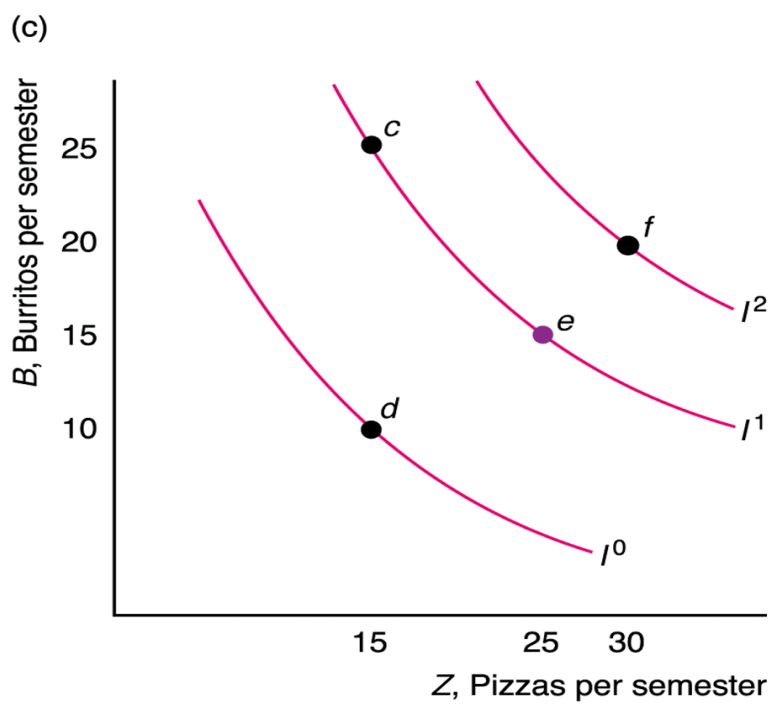


$e = (15, 25)$
$d = (10, 15)$

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

Indifference curves





$I^0 : a \sim e$

$I^1 : b \sim e$

Q : Do the axioms hold?

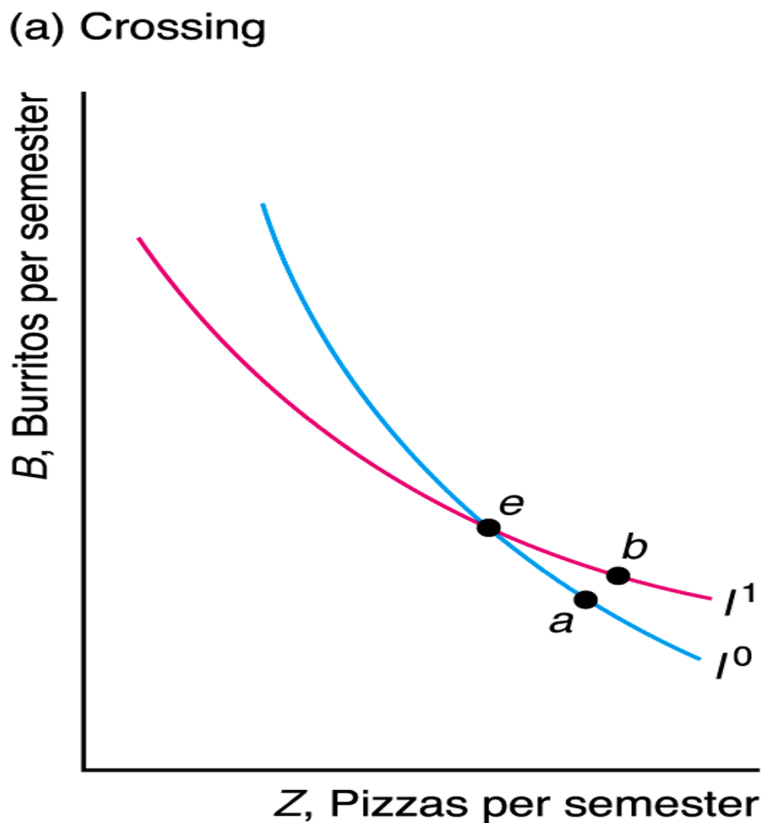
Question :

(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.

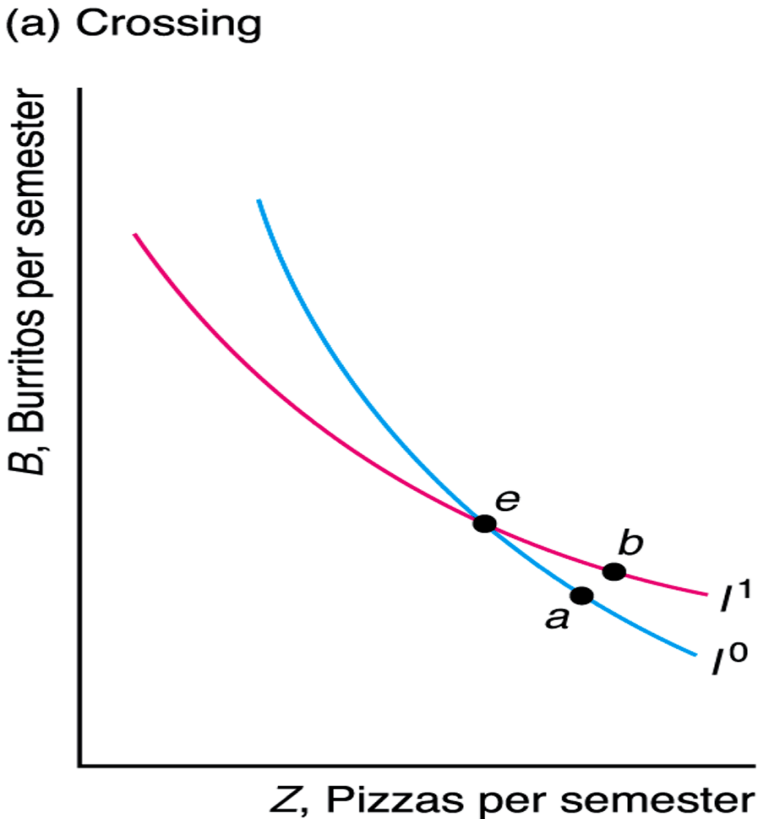
Otherwise the transitivity axiom is violated. □

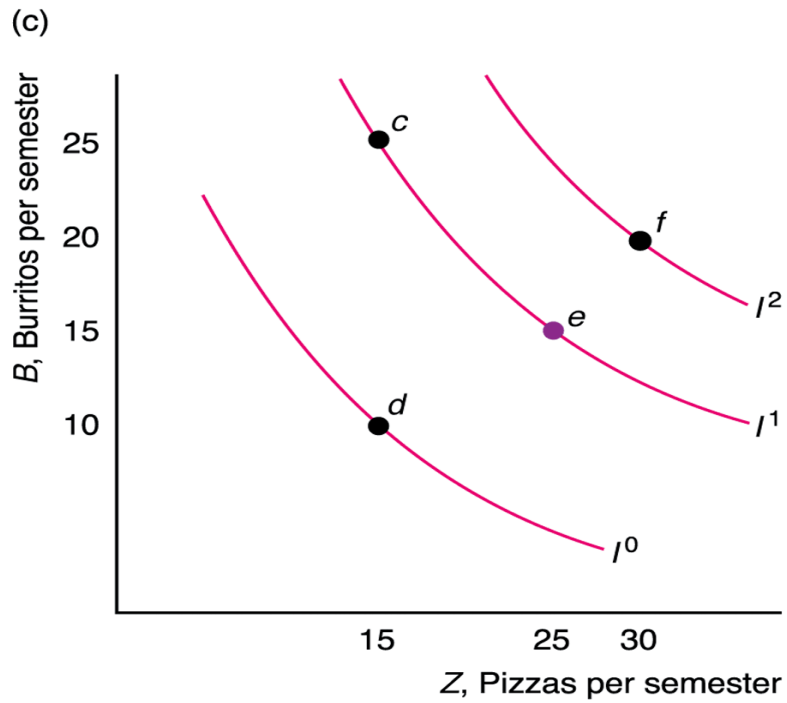
$I^0 : a \sim e$

$I^1 : b \sim e$

Q : Do the axioms hold?

Indifference curves





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Indifference curves

Psych. Assumptions

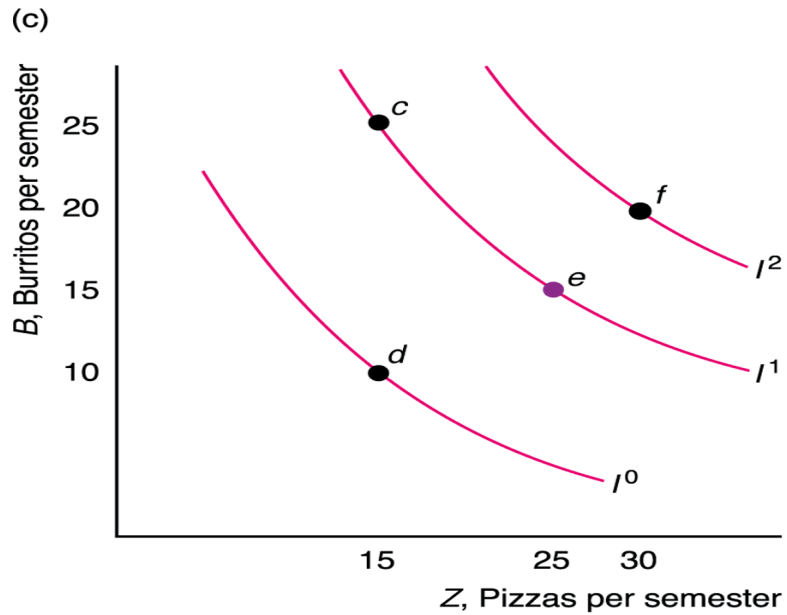
Axiom

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

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

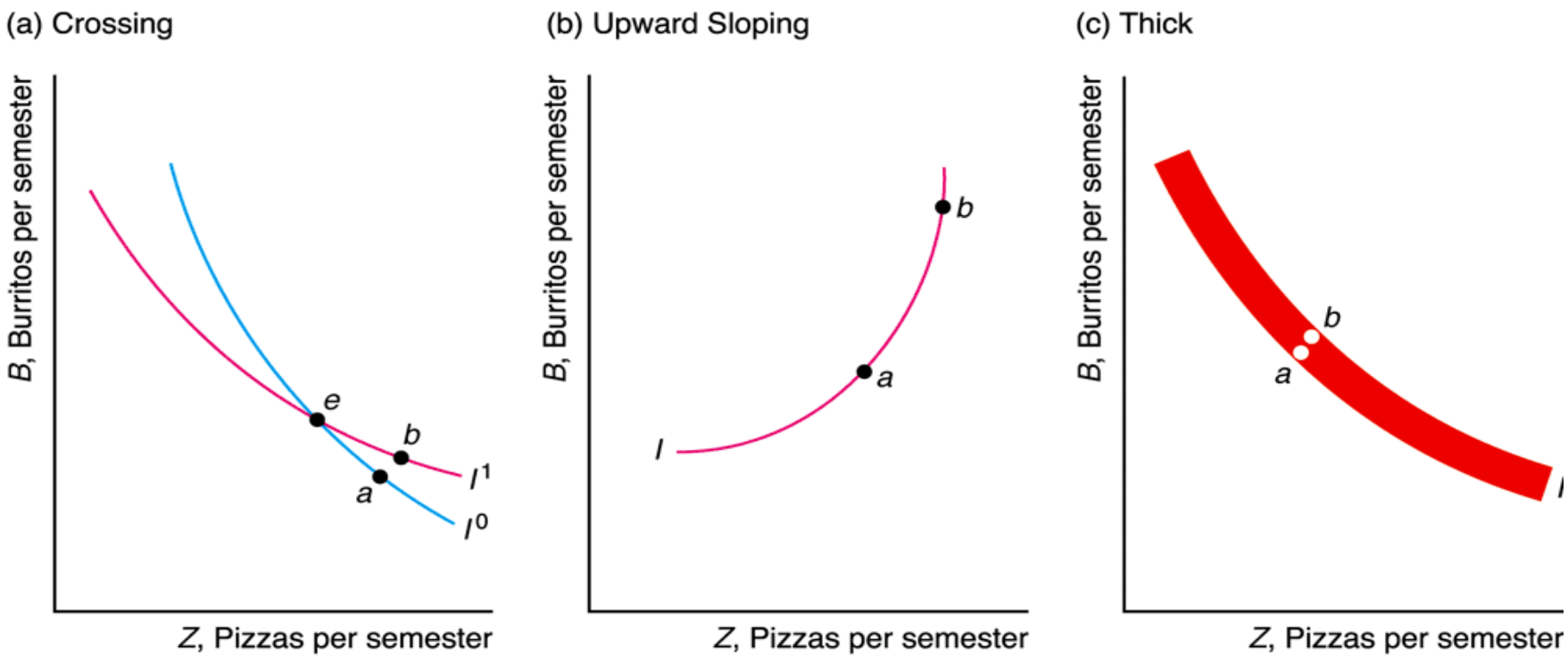
5^{th} *Axiom: Convex preferences*

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

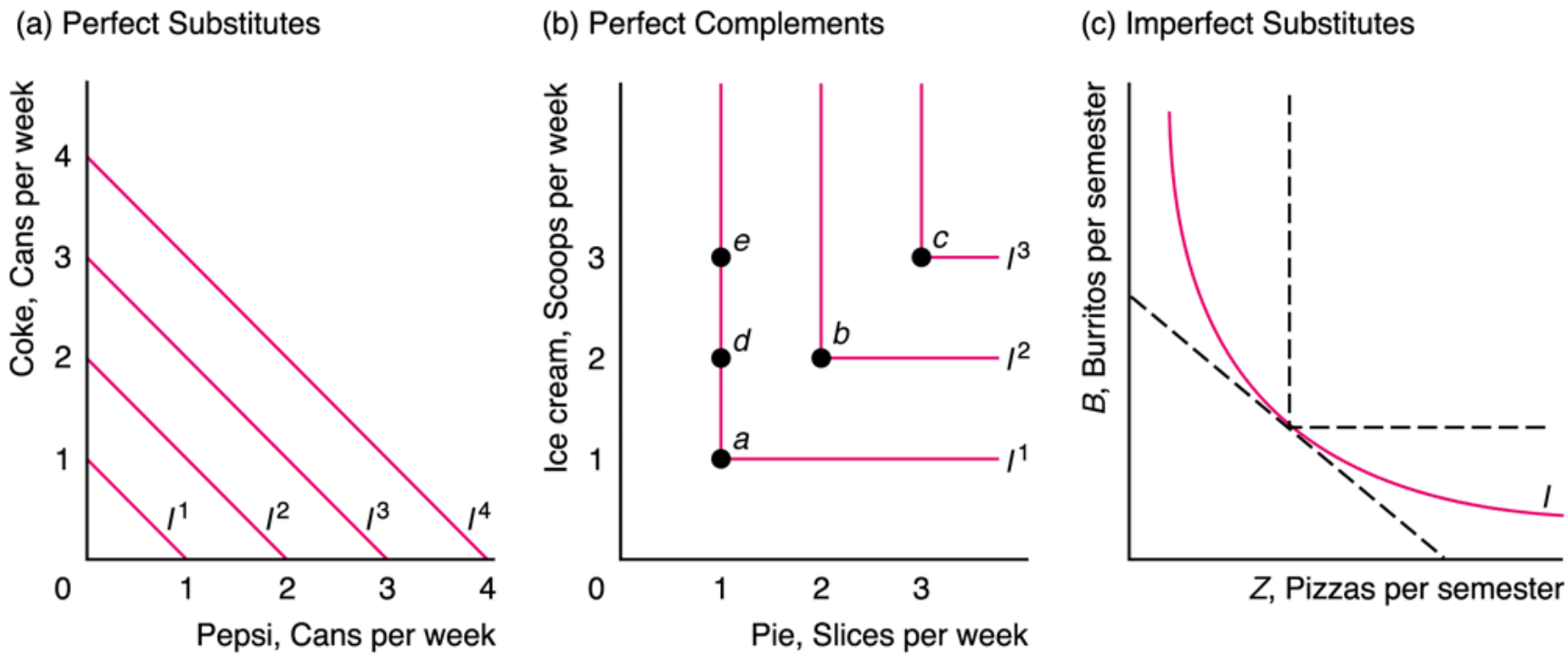


Question :
(a) $I^0 \sim I^1 \sim I^2$;
(b) $I^0 \succ I^1 \succ I^2$; or
(c) $I^2 \succ I^1 \succ I^0$

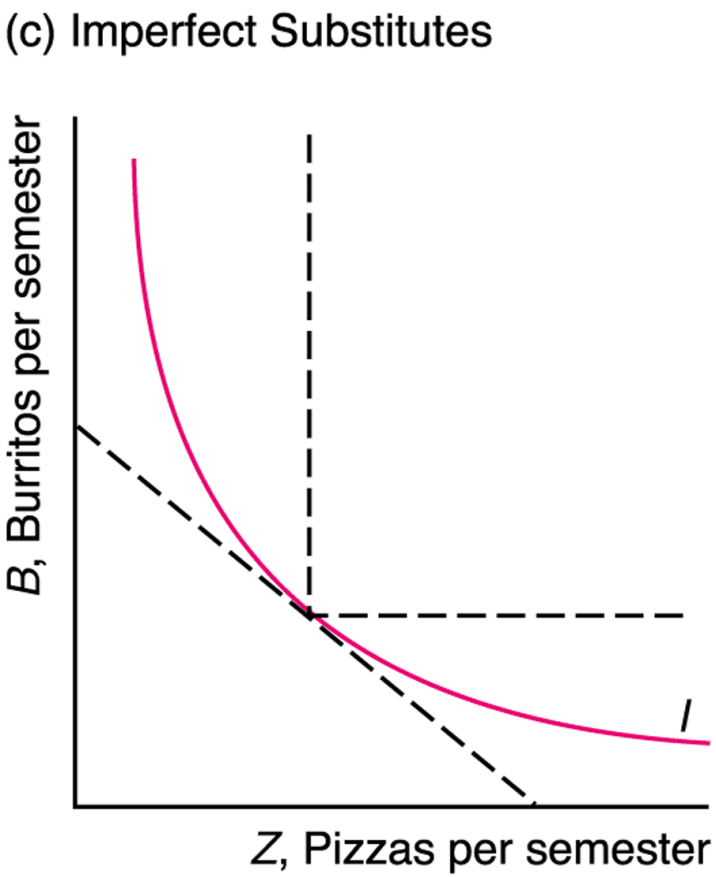
Indifference curves: 'No-No-No' Cases



Indifference curves: Special Cases



Marginal rate of substitution



Definition

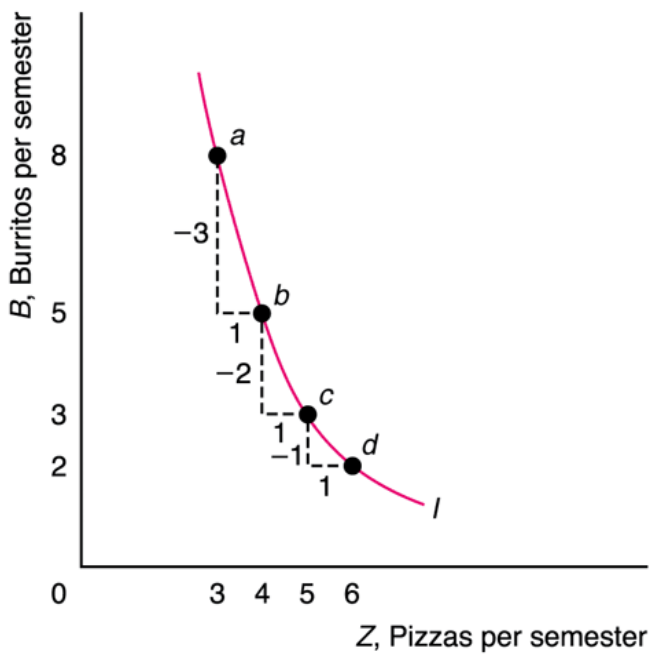
Marginal rate of substitution (MRS) is the rate at which the consumer is just willing to substitute one good for the other

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

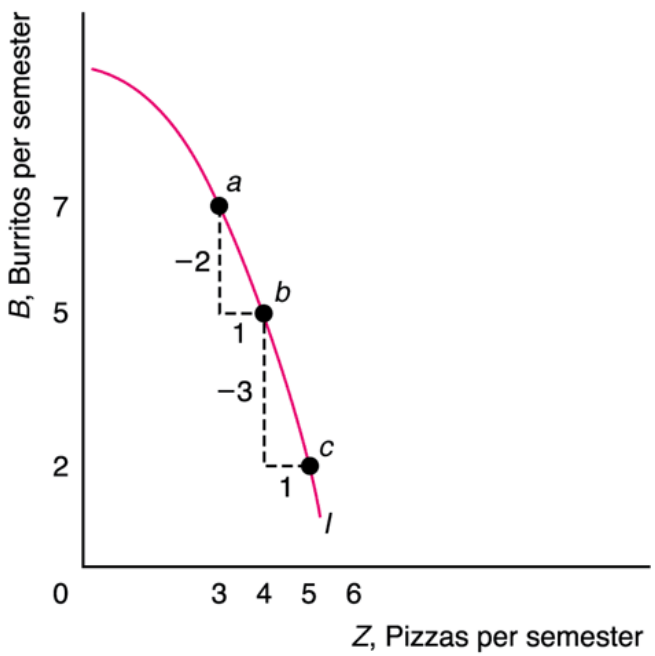
$$\frac{\Delta x_2}{\Delta x_1} \text{ or } \frac{dx_2}{dx_1}$$

Diminishing Marginal Rate of Substitution

(a) Indifference Curve Convex to the Origin



(b) Indifference Curve Concave to the Origin



Next lecture

Further studies in Neoclassical Theory!

Thank you!

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.

Utility

Theorem of Debreu

Theorem

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

Proof.

Do not need for this course. □

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 $\succ_P$.

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

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

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

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

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