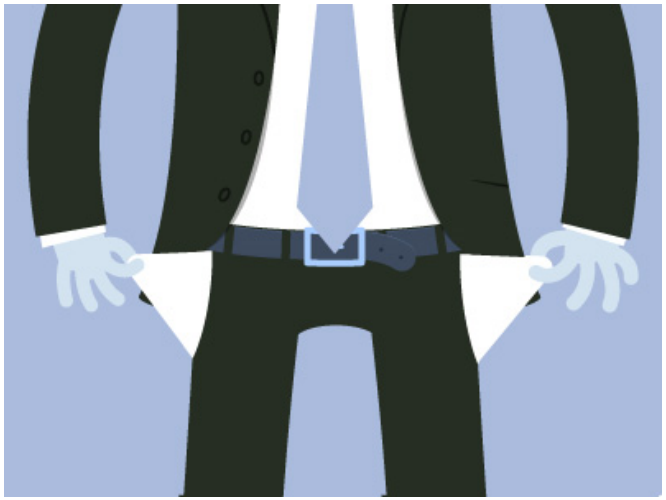
Competitive consumer

"About your economic situation, do you see the light at the end of the tunnel?"

"I think the light at the end of the tunnel has been turned off … due to my budget constraints."



The Budget Constraint (I):

What the consumer can afford

• Now Hurley has an **income**. So he divides his income between two goods: fish and mangos.

• A **budget constraint** represents the combinations of goods and services that a consumer can purchase given current prices with his/her income. Thus, it requires that the **cost of a consumer's consumption bundle** be no more than the **consumer's total income**.

• A **consumer's consumption possibilities** is the set of all consumption bundles that can be consumed given the consumer's income and market prices, and …

• … a **consumer's budget line** is the consumption bundles available to a consumer who spends all of his/her income.

The Budget Constraint (II):

Example 1 (I)

Hurley's income is $1,200

Market prices are P_F = $4 per fish and P_M = $1 per mango.

A. If Hurley spends all his income on fish, how many fish does he buy?

B. If Hurley spends all his income on mangos, how many mangos does he buy?

C. If Hurley buys 100 fish, how many mangos can he buy?

D. Plot each of the bundles from parts **A** – **C** on a graph that measures fish on the x-axis and mangos on the y-axis, connect the dots.

The Budget Constraint (III):

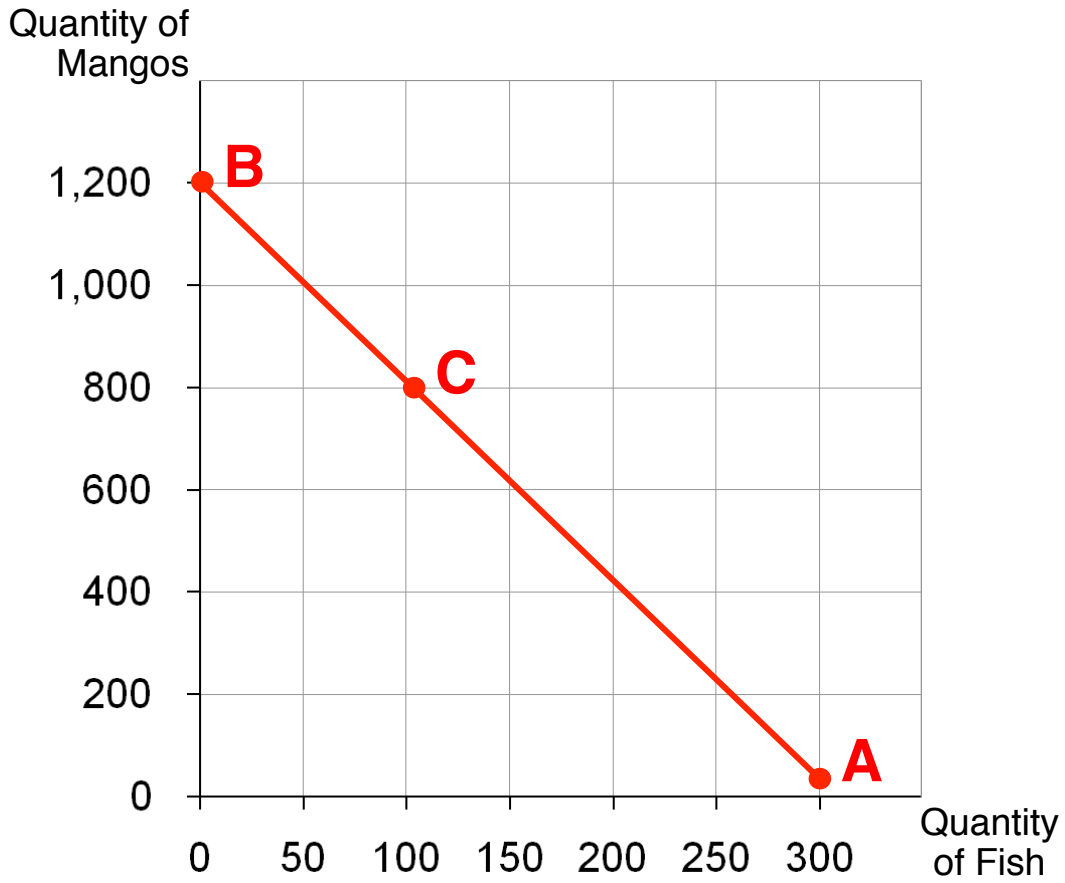
Example 1 (II)

A. $1200/$4
= 300 fish

B. $1200/$1
= 1200 mangos

C. 100 fish cost $400, $800 left buys 800 mangos

D. Hurley's budget line shows the bundles he can afford.



The Slope of the Budget Line

Example 1 (III): Slope and Prices

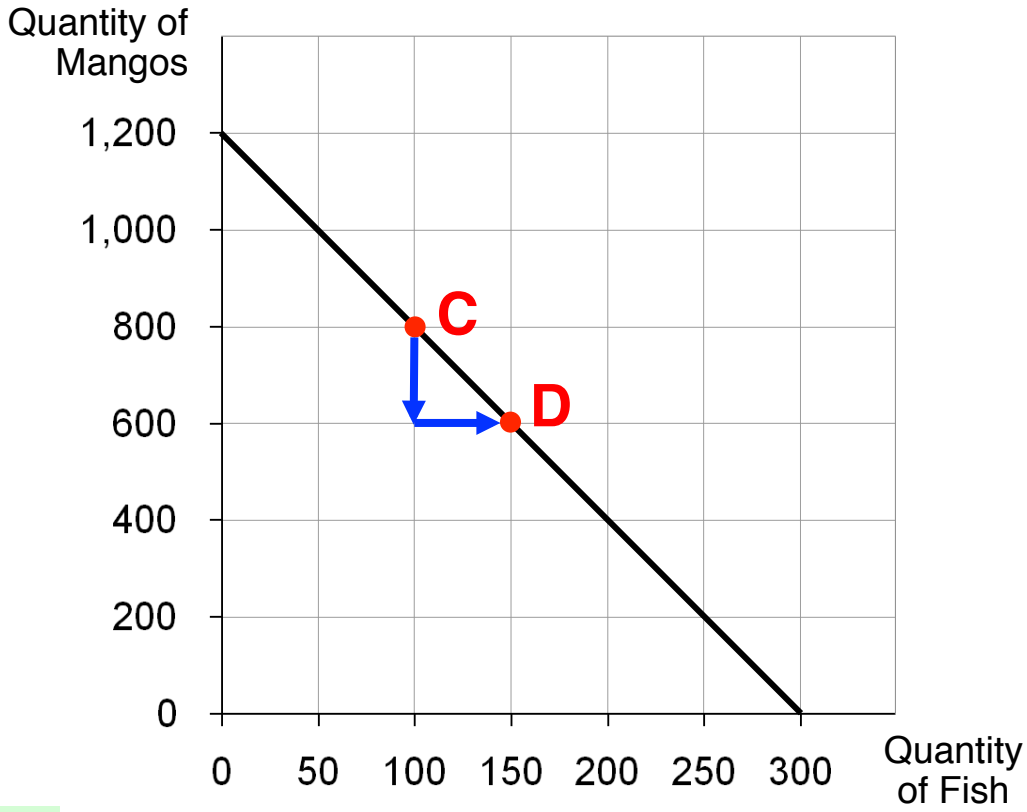
- Hurley must give up 4 mangos to get one fish:

Slope = – 4

… and is constant along the budget line.

- The slope of the budget line equals:
  1) the rate at which Hurley can trade mangos for fish.
  2) the opportunity cost of fish in terms of mangos
  3) the relative price of fish:

$$\frac{\text{price of fish}}{\text{price of mangos}} = \frac{\$4}{\$1} = 4 \text{ mangos per fish}$$



Budget Constraint and Budget Line

Algebraic expressions

The budget constraint:

$$(Q_X \cdot P_X) + (Q_Y \cdot P_Y) \leq N$$

The budget line:

$$(Q_X \cdot P_X) + (Q_Y \cdot P_Y) = N$$

Or, basically:

$$Q_Y = N / P_Y - (P_X / P_Y) \cdot Q_X$$

Budget Constraint and Budget Line

Example 1 (IV)

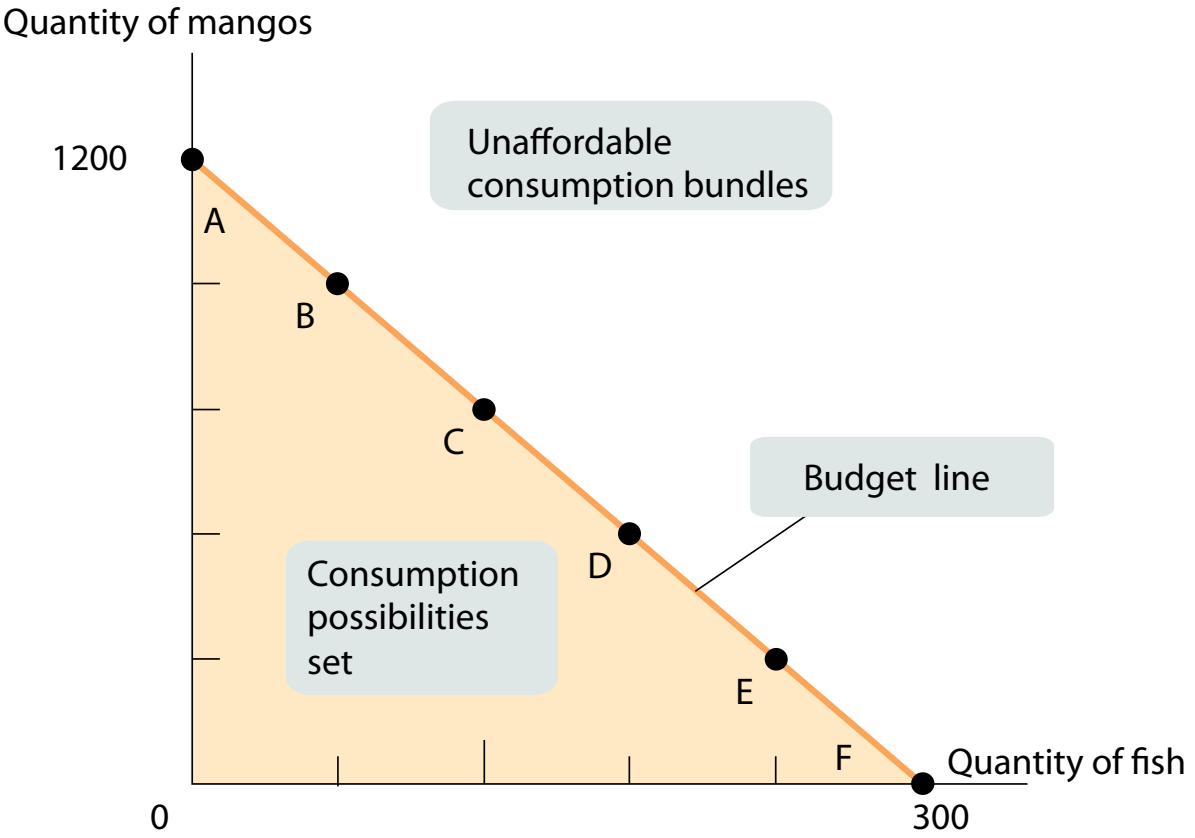
Hurley's income: $1200

Prices: P_F = $4 per fish,
P_M = $1 per mango

Hurley's budget line:

$Q_M = N/P_M - (P_F/P_M) \times Q_F$

$Q_M = 1200 - 4\,Q_F$



Shifts of the Budget Line

Example 2 (I)

Show what happens to Hurley's budget line if:

A. His income falls to $800, or

B. The price of mangos rises to P_M = $2 per mango.

Shifts of the Budget Line

Example 2 (II)

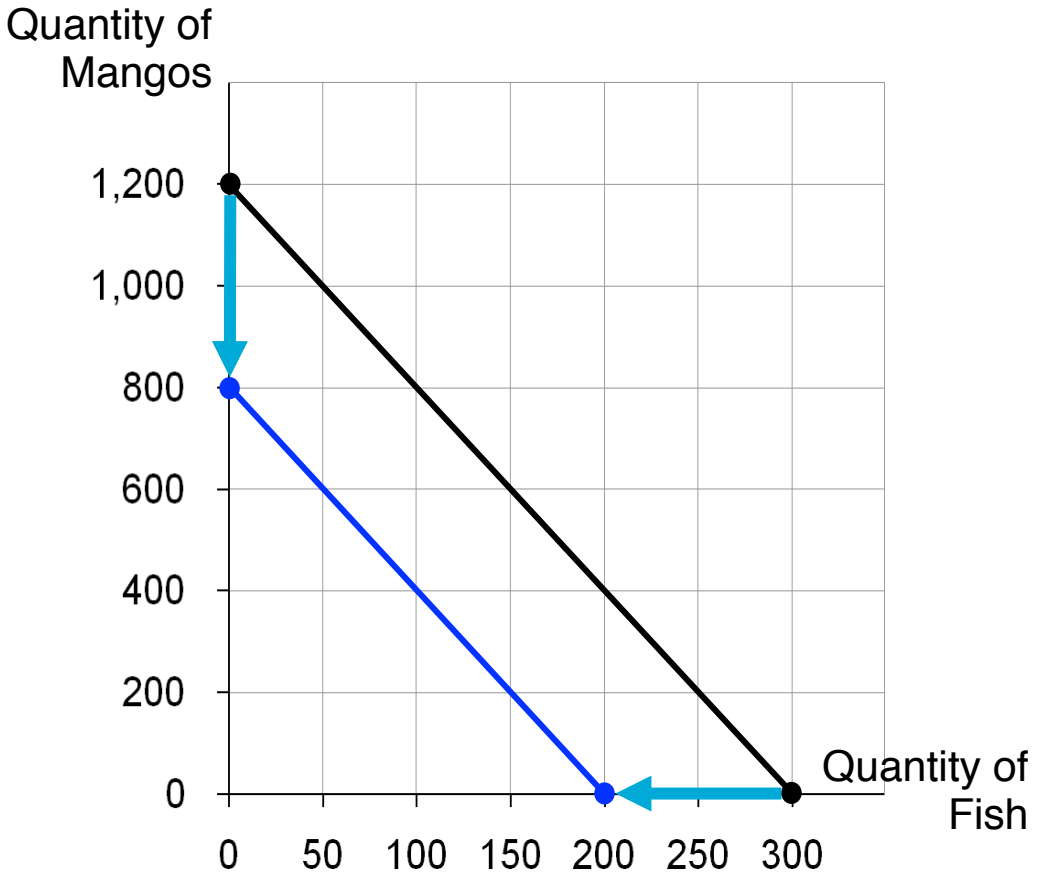
A.

Now, Hurley can buy $800/$4 = 200 fish, or

$800/$1 = 800 mangos,

or any combination in between.

A fall in income shifts the budget line downwards and decreases the consumption possibilities set



Shifts of the Budget Line

Example 2 (III)

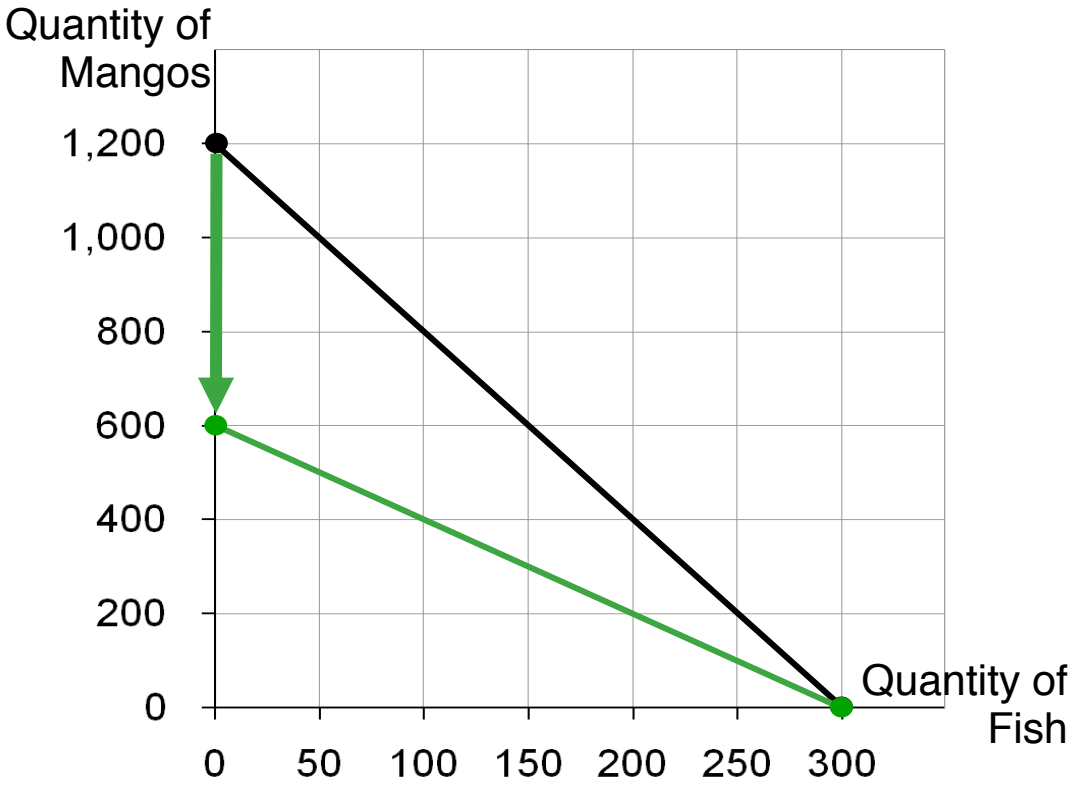
B.

Hurley can still buy 300 fish.

But now he can only buy \$1200/\$2 = 600 mangos.

The slope is smaller, relative price of fish is now only 2 mangos.

An increase in the price of one good pivots the budget line downward, decreasing its slope (in absolute value)

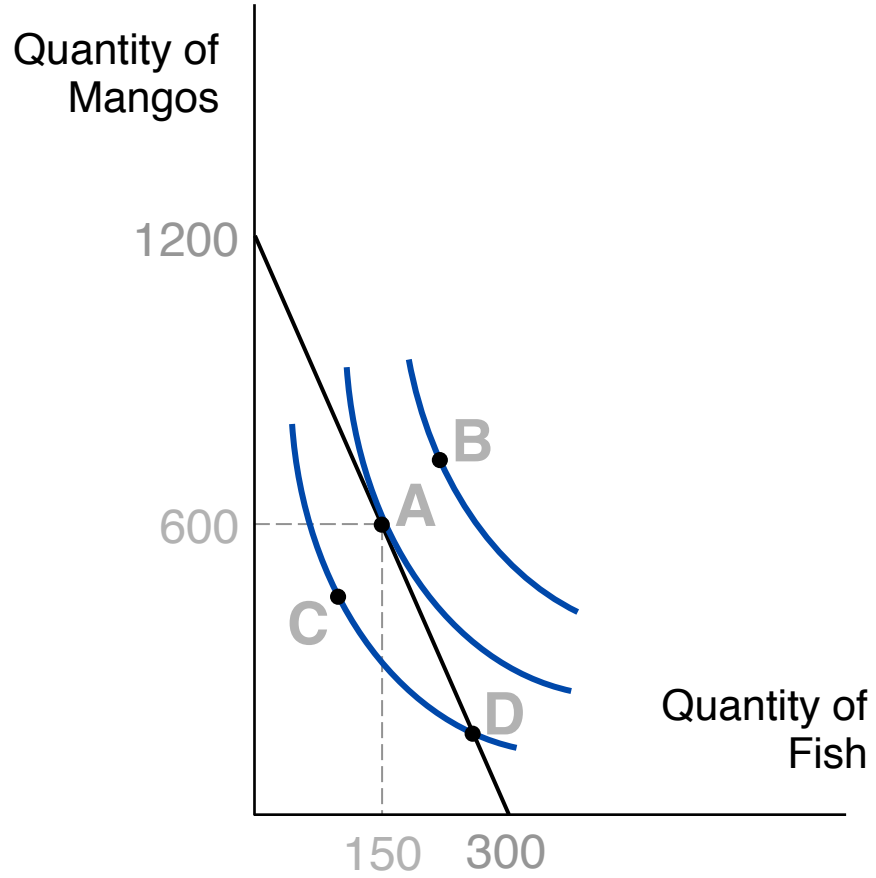


What the consumer chooses (I)

Optimization (I)

- **A** is the *optimum*: the point on the budget constraint tangent to the highest possible indifference curve.
- Hurley prefers **B** to **A**, but he cannot afford **B**.
- Hurley can afford **C** and **D**, but **A** is on a higher indifference curve.

The optimum is the bundle Hurley most prefers out of all the bundles he can afford.



What the consumer chooses (II)

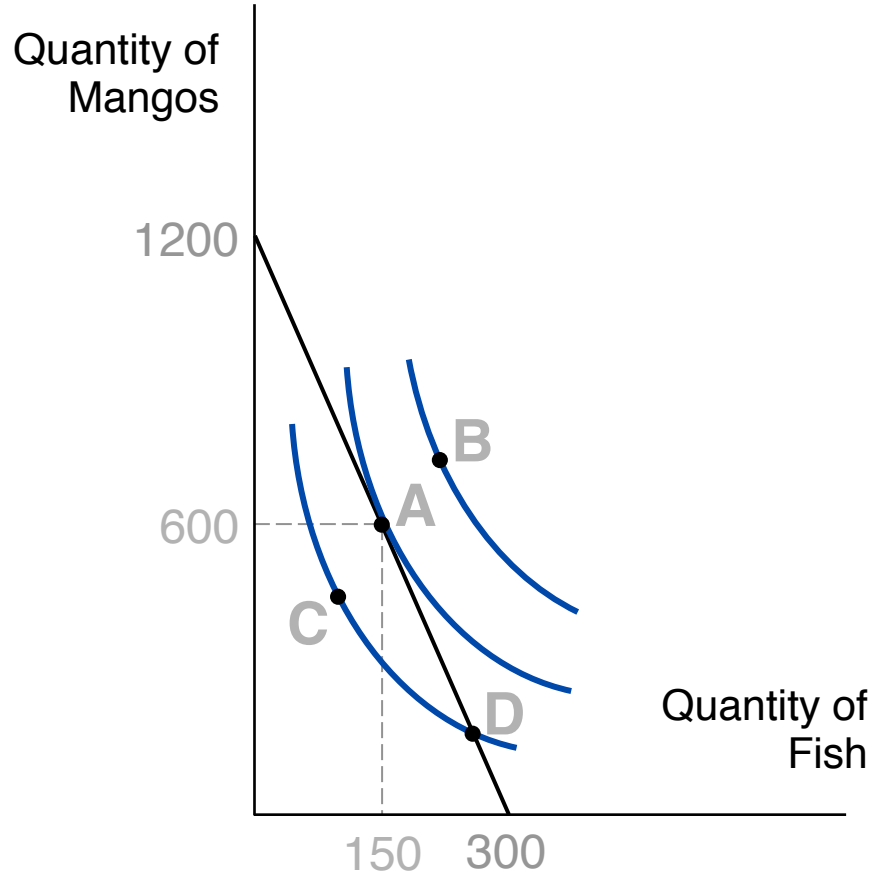
Optimization (II)

At the optimum, the slope of the indifference curve equals the slope of the budget constraint:

$$MRS_F^M = P_F/P_M$$

marginal value of fish (in terms of mangos)

price of fish (in terms of mangos)



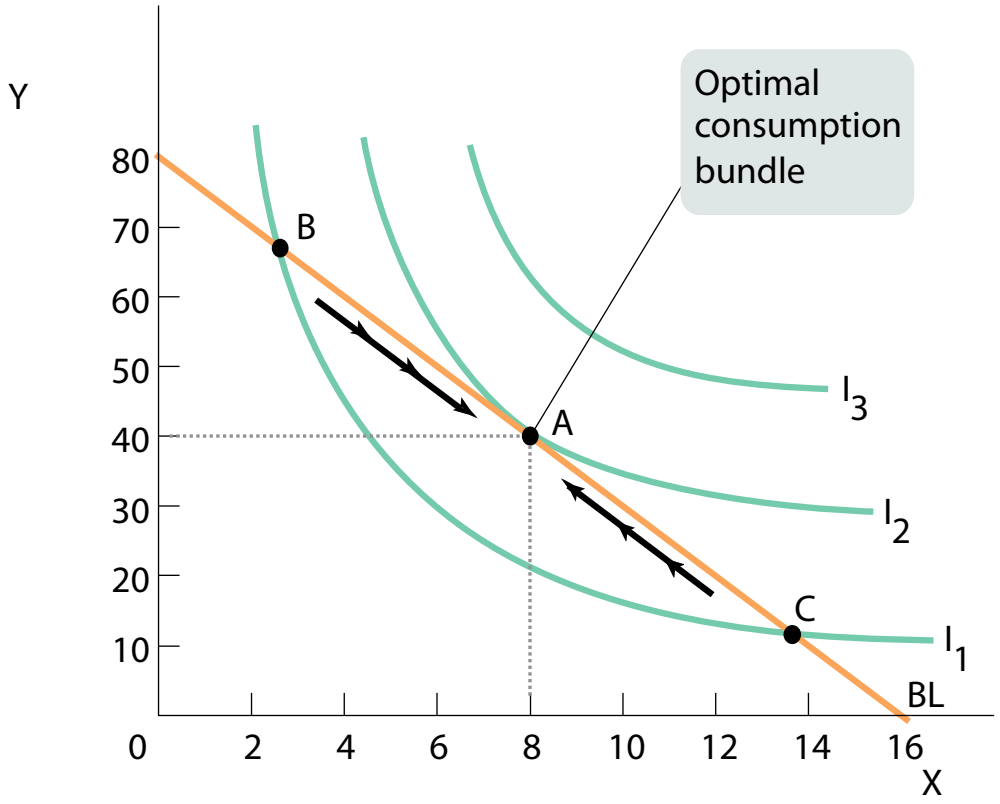
What the consumer chooses (III)

The Relative Price Rule

• The **tangency condition** between the indifference curve and the budget line defines the **optimal consumption bundle** (when indifference curves are convex)

• the slope of the budget line is the **relative price of good *X* in terms of good *Y***, P_X/P_Y, the rate at which *X* trades for *Y* **in the market**.

• At the optimal consumption bundle, the **marginal rate of substitution** between two goods **is equal to their relative price.** This is known as the **Relative Price Rule.**

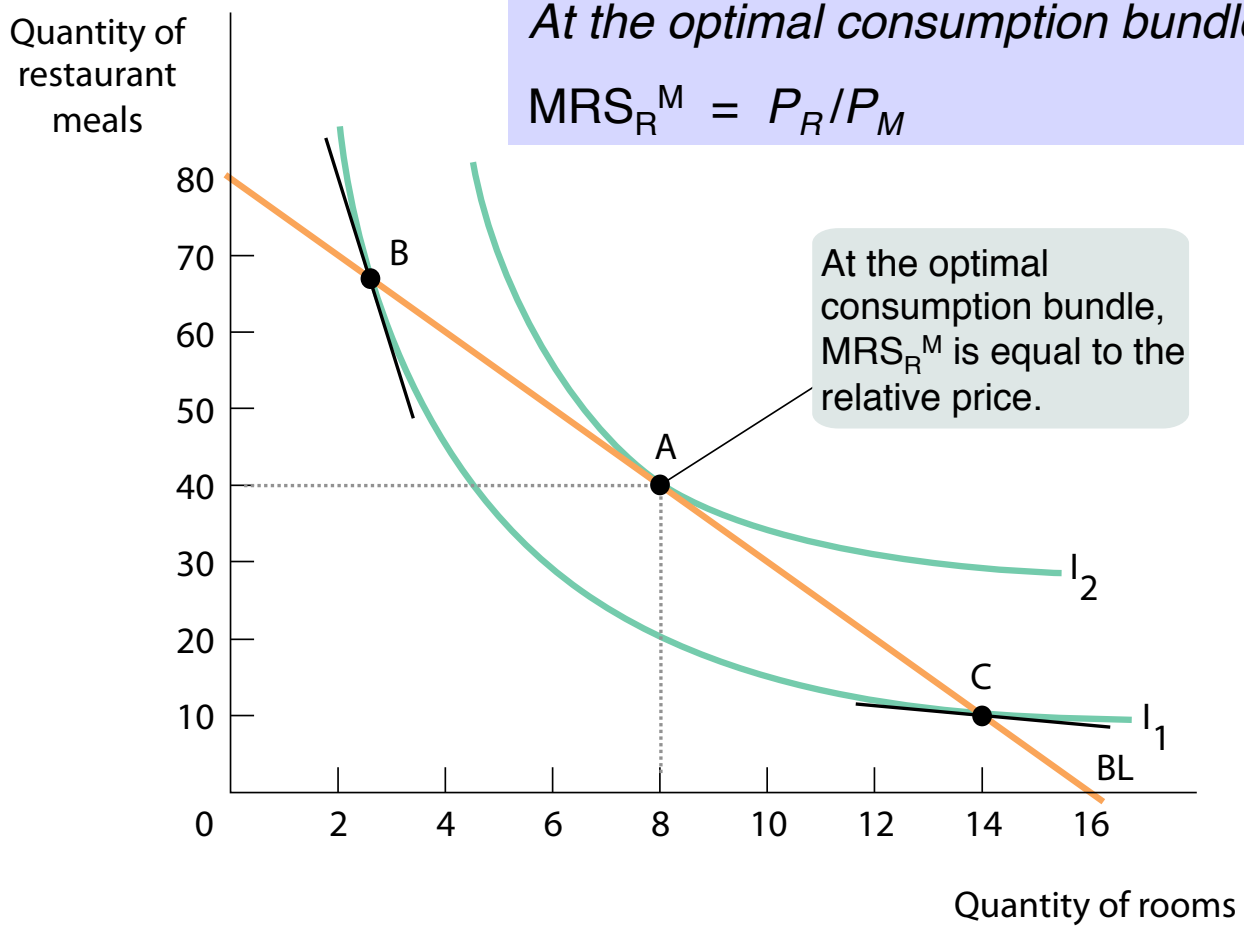


What the consumer chooses (IV)

Understanding the Relative Price Rule

At the optimal consumption bundle:

$MRS_R^M = P_R/P_M$

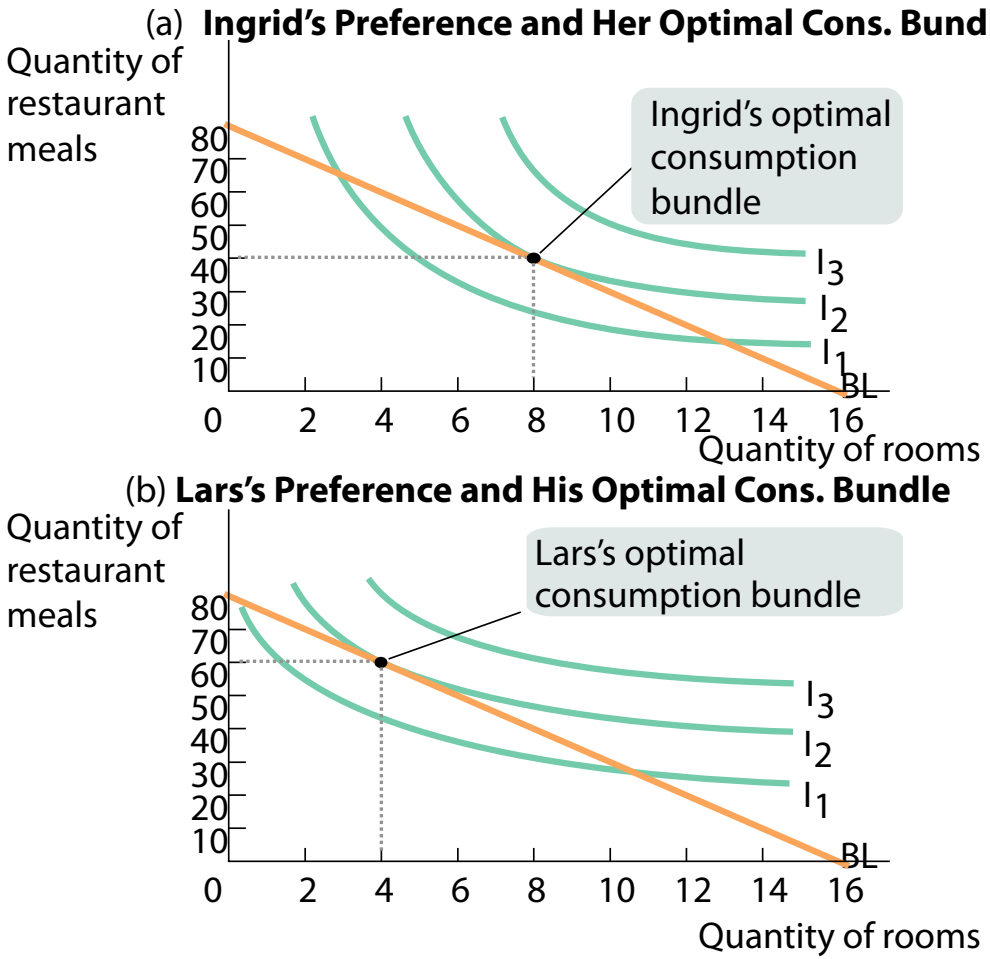


Preferences and Choices (I)

Differences in Preferences

• When we say that two **consumers have different preferences**, we mean that they have **indifference curve maps with different shapes**.

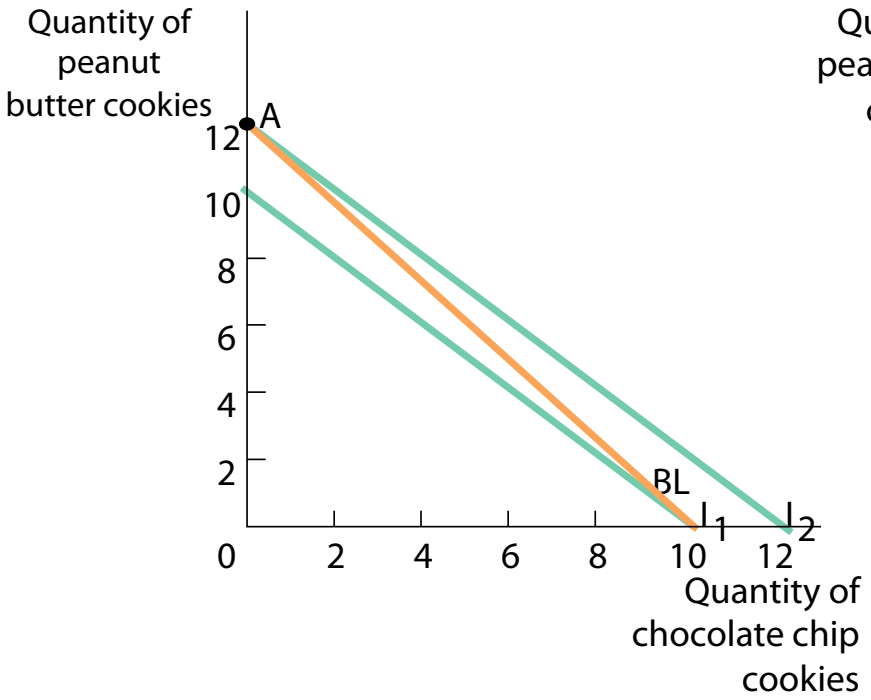
• And those different maps will translate into **different consumption choices**, **even** among consumers **with the same income** who face the same prices.



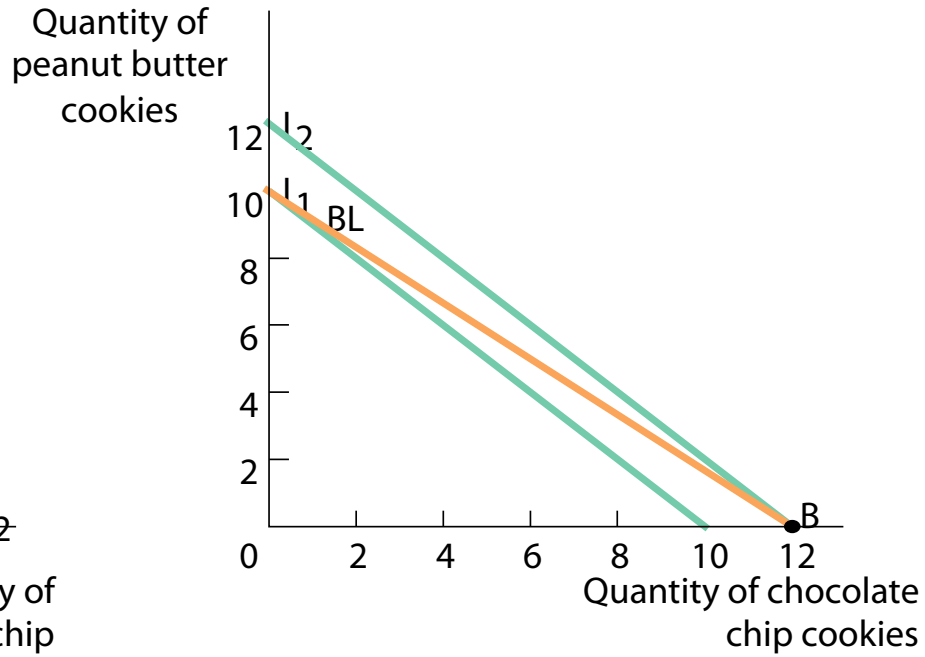
Preferences and Choices (II)

Consumer Choice between Perfect Substitutes

(a) Mike Buys Only Peanut Butter Cookies

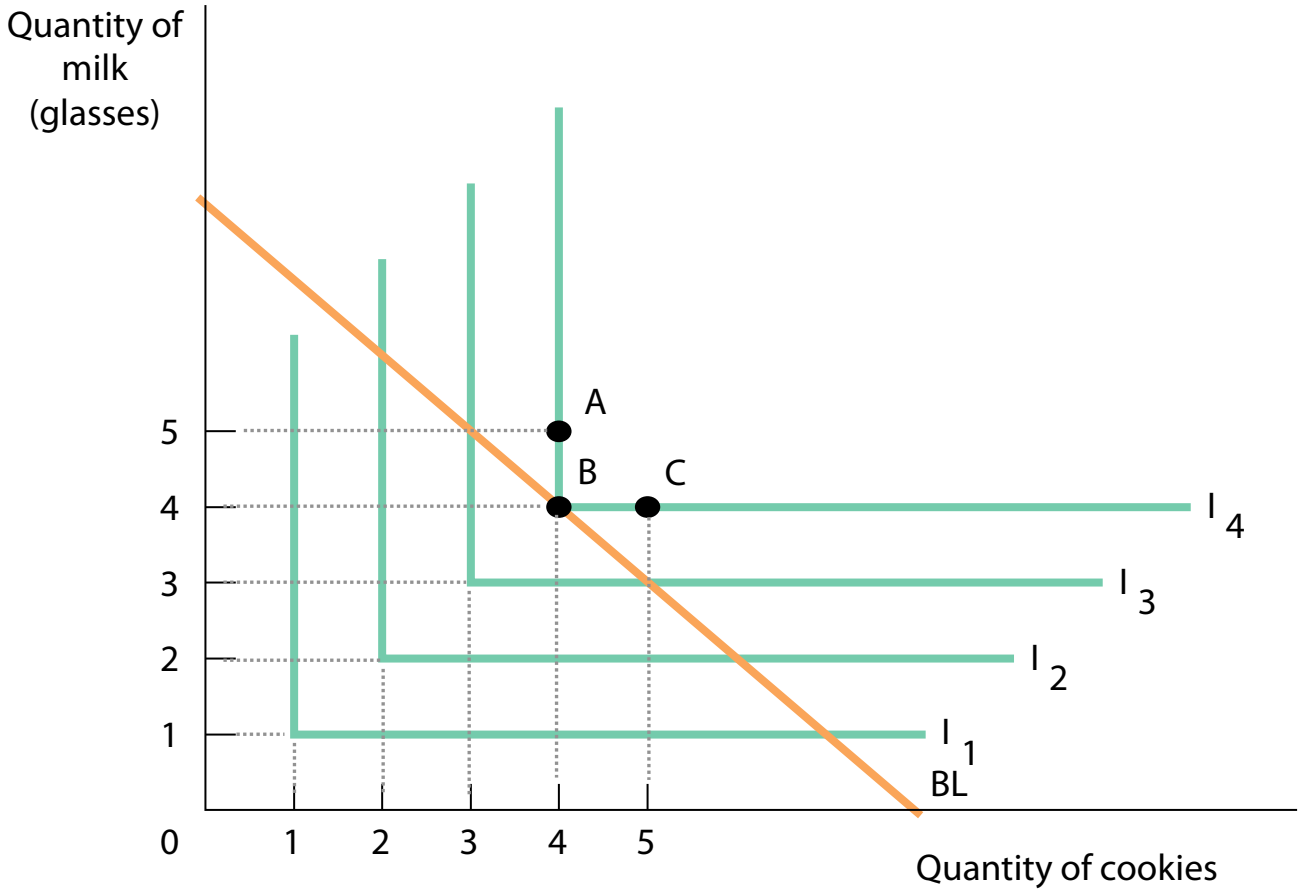


(b) Mike Buys Only Chocolate Chip Cookies



Preferences and Choices (III)

Consumer Choice between Perfect Complements

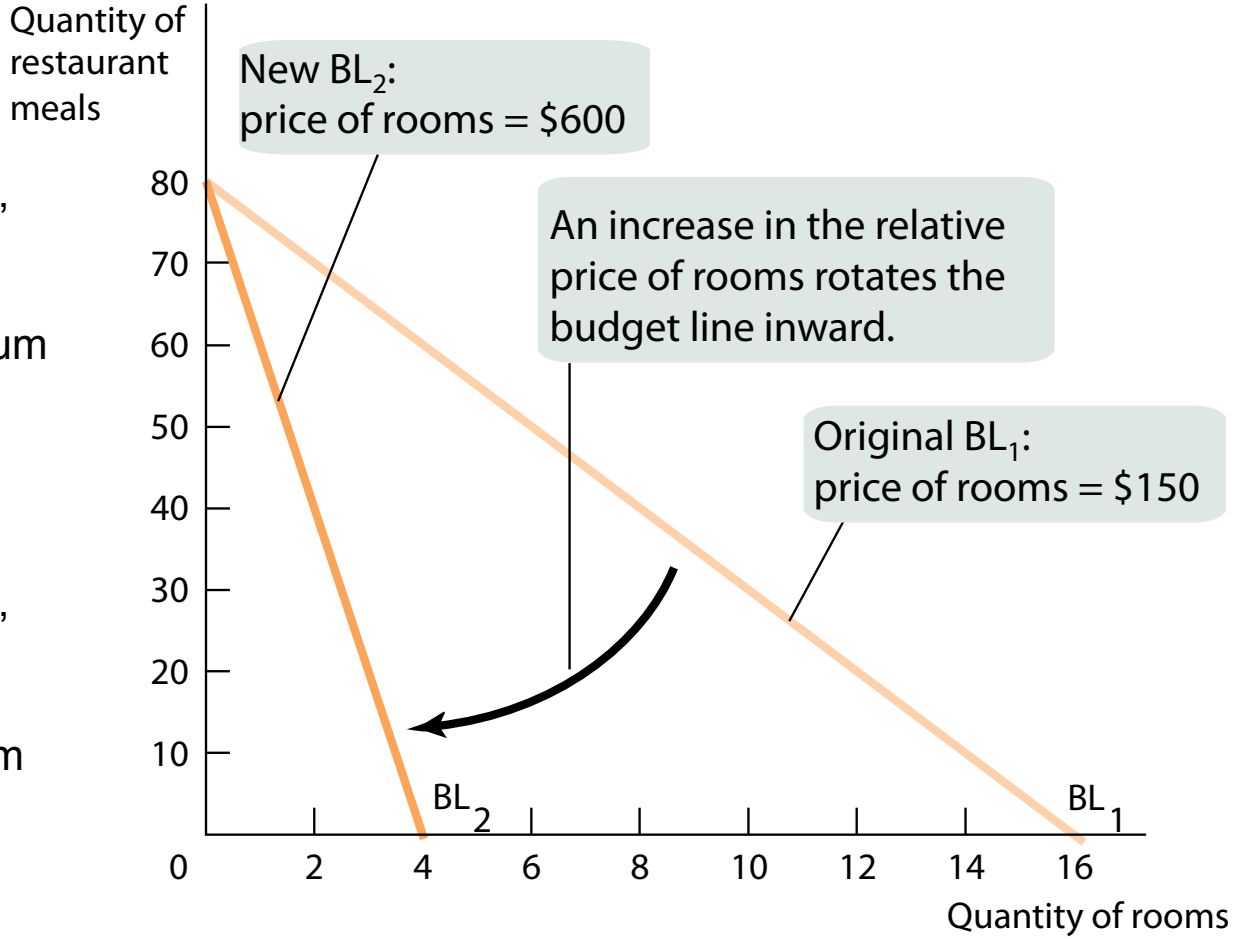


Prices, Income and Demand (I)

Effects of a Price Increase in the Budget Line

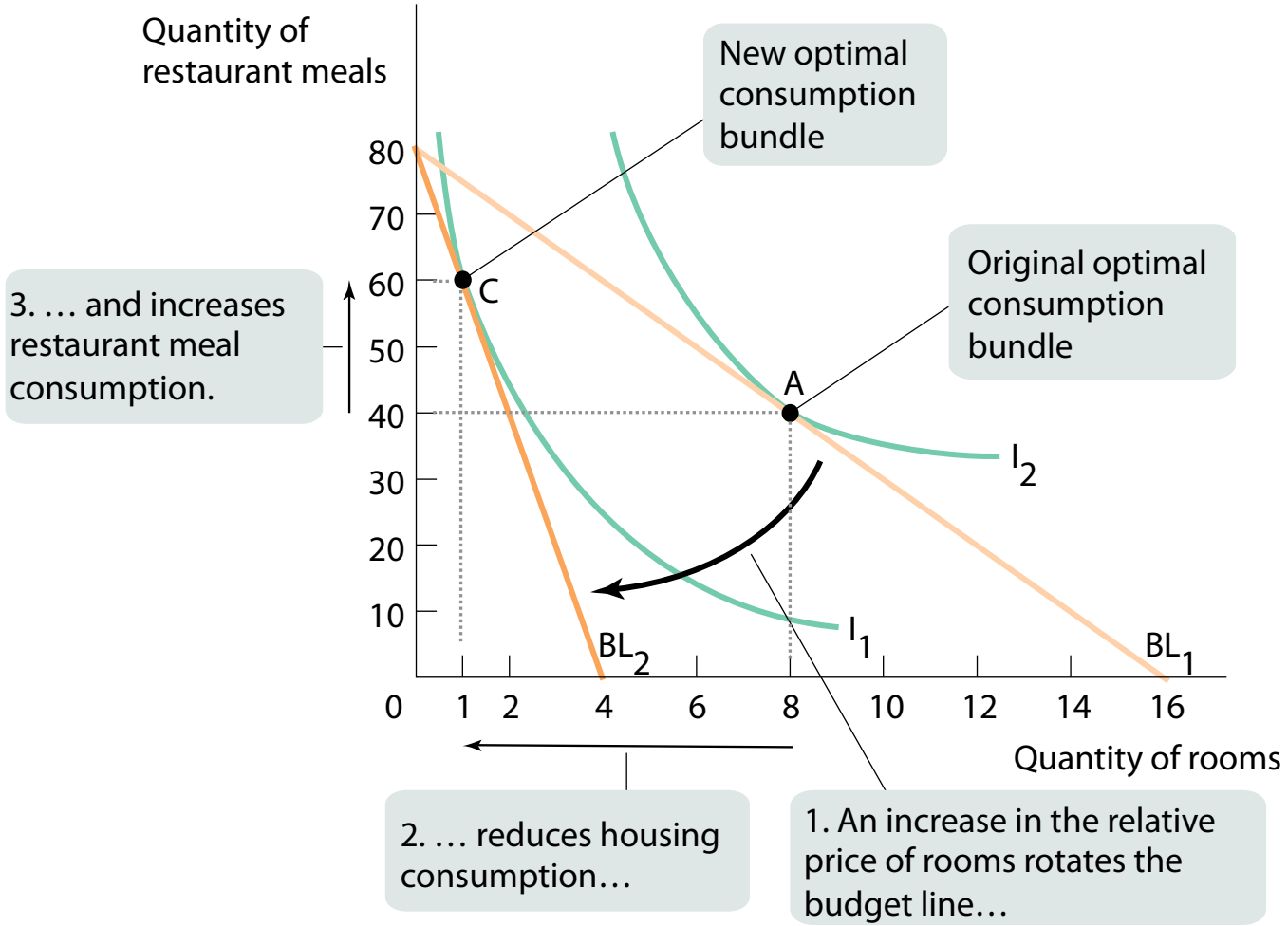
- **BL_1:** Income = 2400$, maximum number of rooms she can afford: **2400/150 = 16**, maximum number of meals: **2400/30 = 80**.

- **BL_2:** Income = 2400$, maximum number of rooms she can afford: **2400/600 = 4**, maximum number of meals: **2400/30 = 80**.



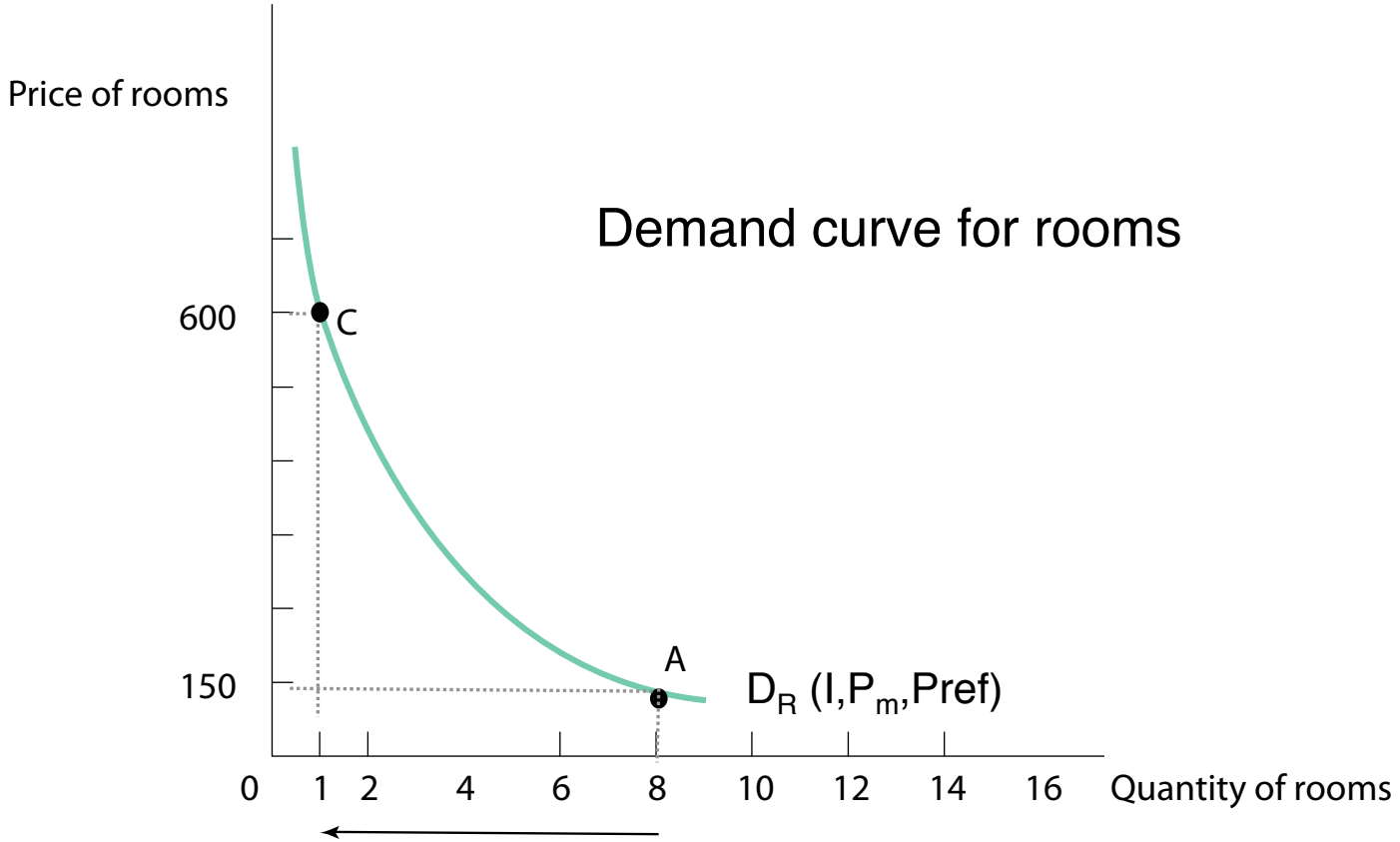
Prices, Income and Demand (II)

Responding to a Price Increase



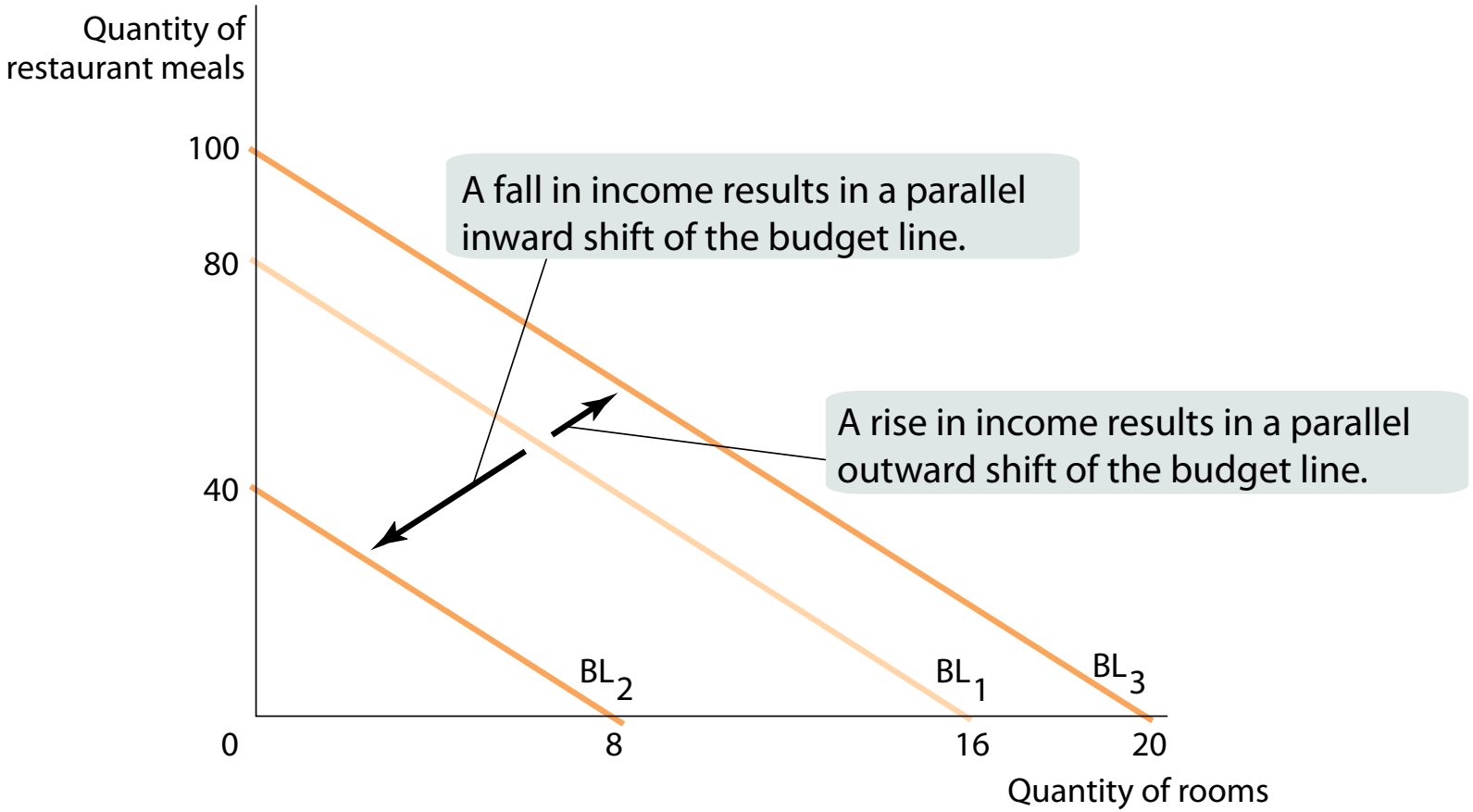
Prices, Income and Demand (III)

The Demand Curve: Movements along the curve



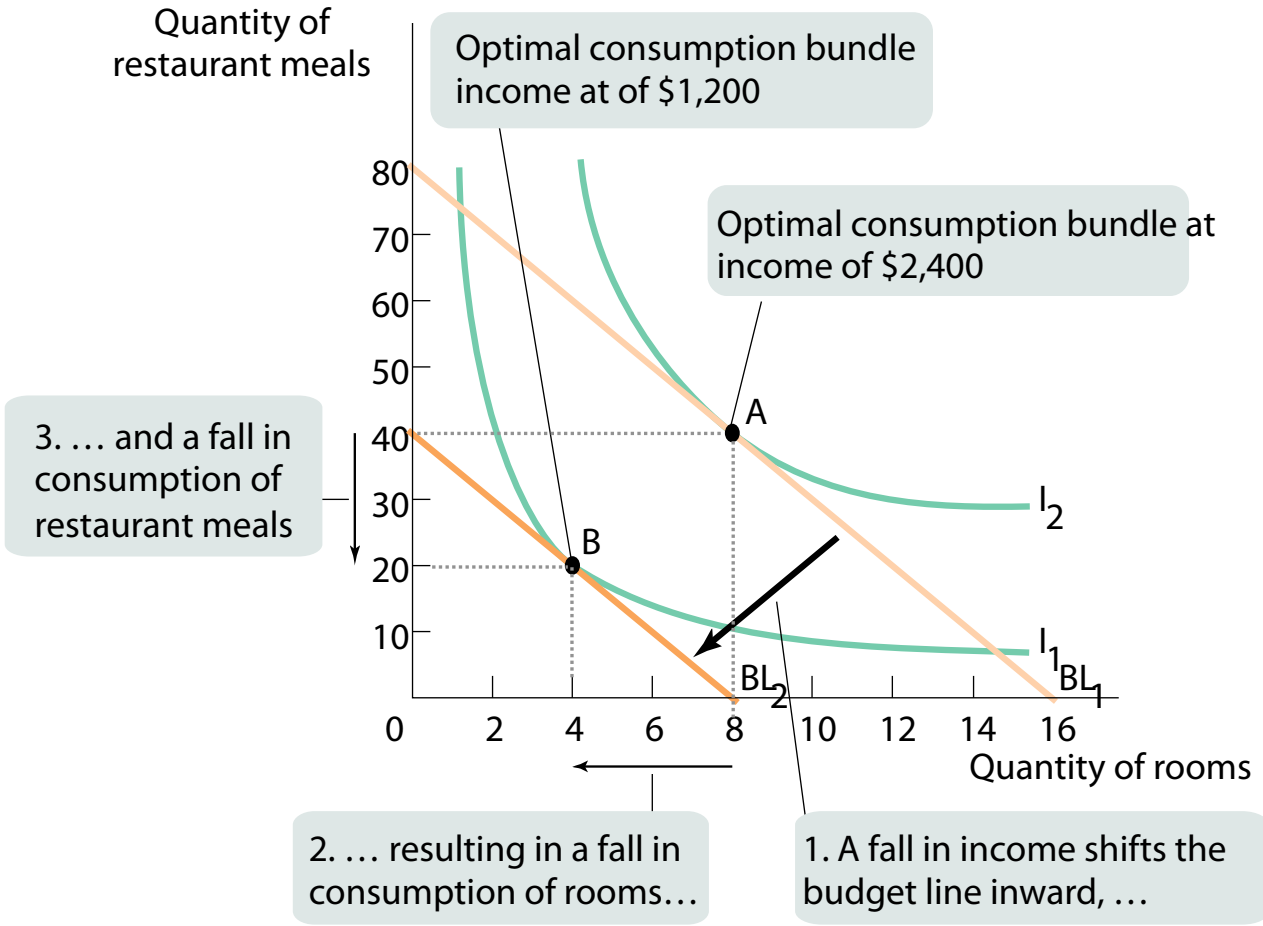
Prices, Income and Demand (IV)

Effects of a Change in income on the Budget Line



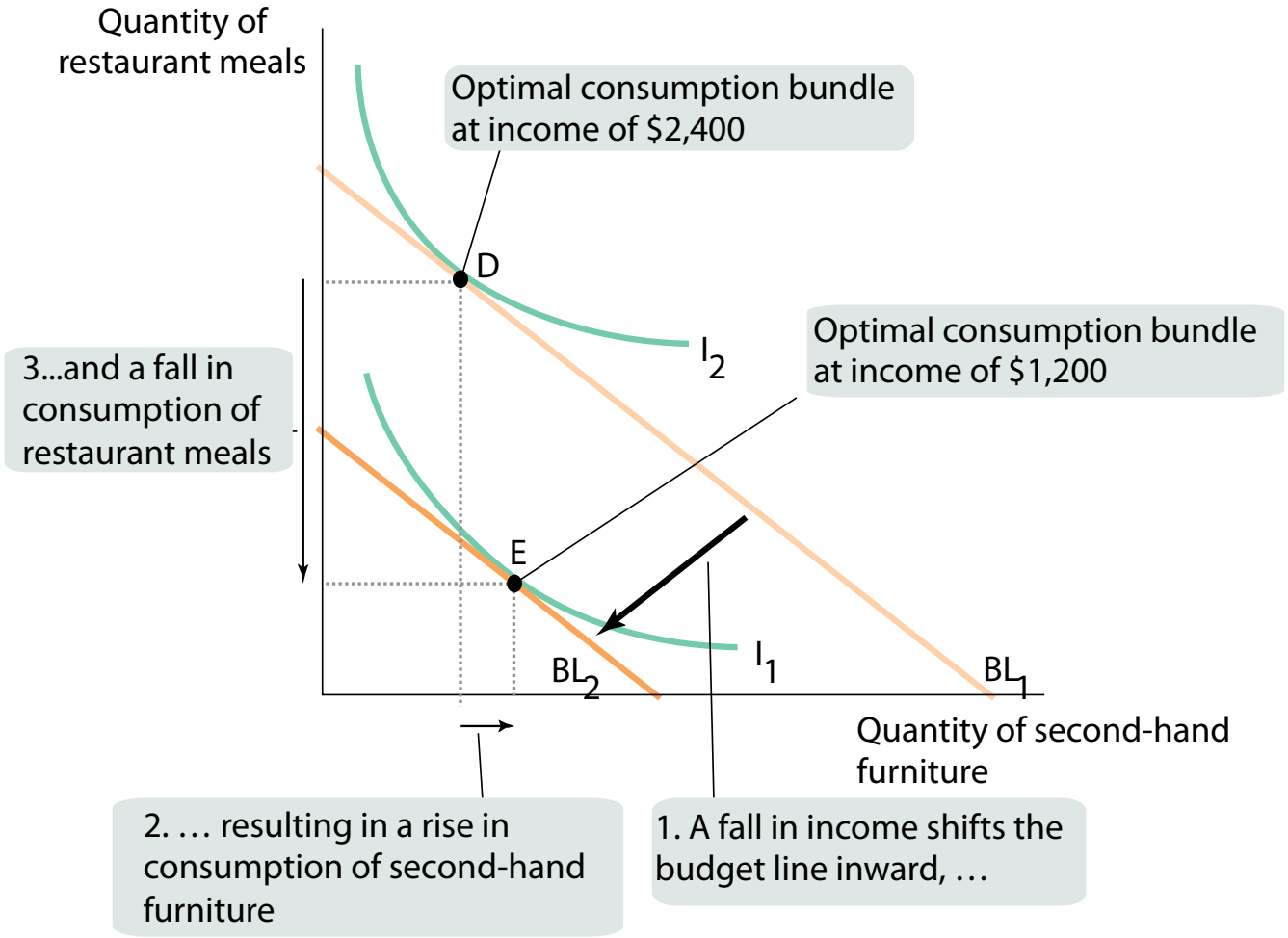
Prices, Income and Demand (V)

Income and Consumption: Normal goods



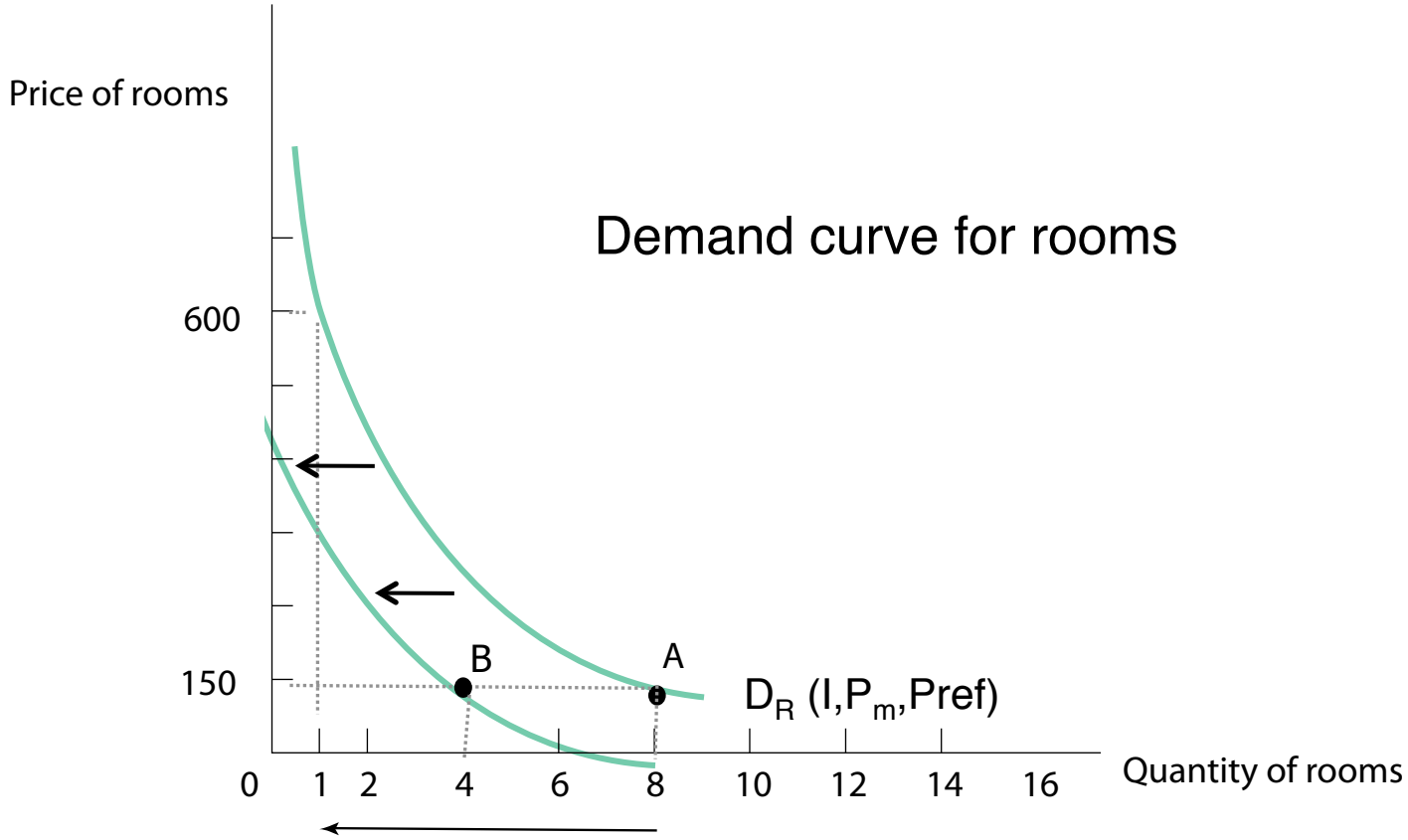
Prices, Income and Demand (VI)

Income and Consumption: An inferior good



Prices, Income and Demand (VII)

The Demand Curve: Shifts in the curve



KEY TERMS

Income
Budget constraint
Consumption bundle
Budget line
Consumption Possibilities
Optimal Consumption Bundle
Tangent Condition
Marginal Rate of Substitution (MRS)
Relative Price
Relative Price Rule
Choice between Perfect substitutes
Choice between Perfect complements
Shifts in the Budget Line
Normal goods
Inferior goods
Demand Curve
Shifts in the Demand Curve
Movements along the Demand Curve