

CHAPTER 21

The Theory of
Consumer Choice

PRINCIPLES OF
Economics
N. Gregory Mankiw

Premium PowerPoint Slides
by Ron Cronovich

© 2009 South-Western, a part of Cengage Learning, all rights reserved

**In this chapter,
look for the answers to these questions:**

- § How does the budget constraint represent the choices a consumer can afford?
- § How do indifference curves represent the consumer's preferences?
- § What determines how a consumer divides her resources between two goods?
- § How does the theory of consumer choice explain decisions such as how much a consumer saves, or how much labor she supplies?

1

Introduction

- § Recall one of the Ten Principles from Chapter 1:
People face tradeoffs.
 - § Buying more of one good leaves less income to buy other goods.
 - § Working more hours means more income and more consumption, but less leisure time.
 - § Reducing saving allows more consumption today but reduces future consumption.
- § This chapter explores how consumers make choices like these.

THE THEORY OF CONSUMER CHOICE

2

The Budget Constraint: What the Consumer Can Afford

§ Example:
Hurley divides his income between two goods:
fish and mangos.

§ A “consumption bundle” is

§ **Budget constraint:**

THE THEORY OF CONSUMER CHOICE

3

ACTIVE LEARNING 1 Budget Constraint

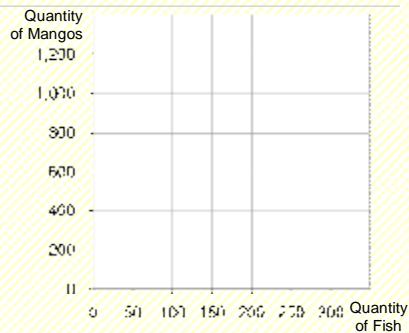
Hurley's income: \$1200

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

- If Hurley spends all his income on fish, how many fish does he buy?
- If Hurley spends all his income on mangos, how many mangos does he buy?
- If Hurley buys 100 fish, how many mangos can he buy?
- Plot each of the bundles from parts A – C on a graph that measures fish on the horizontal axis and mangos on the vertical, connect the dots.

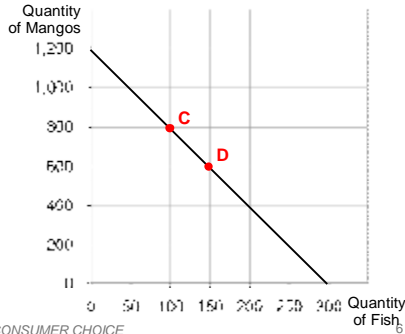
4

ACTIVE LEARNING 1 Answers



The Slope of the Budget Constraint

From **C** to **D**,
 "rise" =
 "run" =
 Slope =
 Hurley must
 give up



THE THEORY OF CONSUMER CHOICE

The Slope of the Budget Constraint

The slope of the budget constraint equals

$$\frac{\text{price of fish}}{\text{price of mangos}}$$

THE THEORY OF CONSUMER CHOICE

7

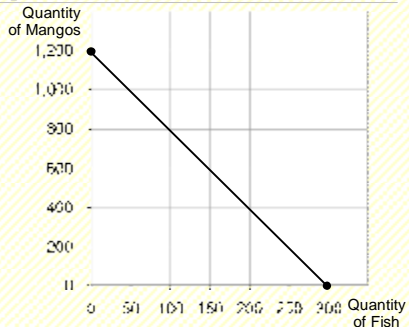
ACTIVE LEARNING 2 Budget constraint, continued.

Show what happens to Hurley's budget constraint if:

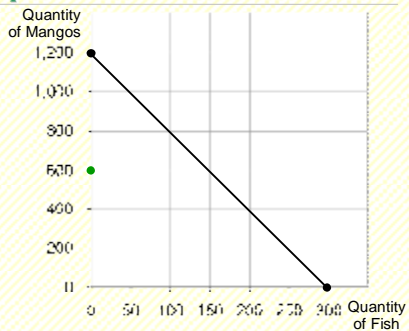
- A. His income falls to \$800.
- B. The price of mangos rises to $P_M = \$2$ per mango

8

ACTIVE LEARNING 2
Answers, part A



ACTIVE LEARNING 2
Answers, part B



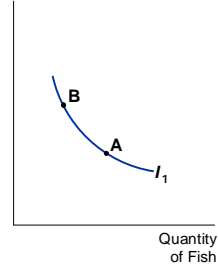
Preferences: What the Consumer Wants

Indifference curve:

Quantity of Mangos
One of Hurley's indifference curves

A, B, and all other bundles on I_1

he is *indifferent* between them.

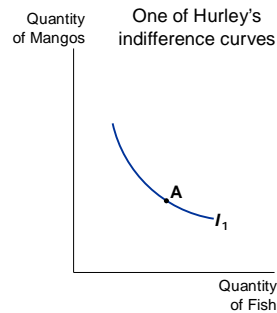


THE THEORY OF CONSUMER CHOICE

11

Four Properties of Indifference Curves

If the quantity of fish is reduced, the quantity of mangos must be increased to keep Hurley equally happy.

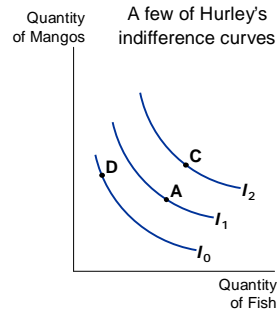


THE THEORY OF CONSUMER CHOICE

12

Four Properties of Indifference Curves

Hurley prefers every bundle on I_2 (like C) to every bundle on I_1 (like A). He prefers every bundle on I_1 (like A) to every bundle on I_0 (like D).



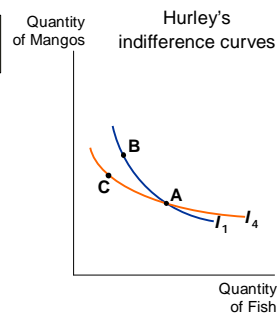
THE THEORY OF CONSUMER CHOICE

13

Four Properties of Indifference Curves

3. Indifference curves cannot cross.

Suppose they did.



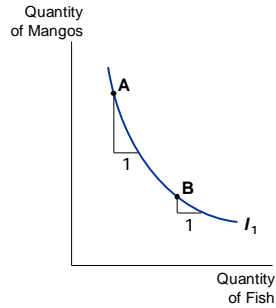
THE THEORY OF CONSUMER CHOICE

14

Four Properties of Indifference Curves

4. Indifference curves are bowed inward.

Hurley is willing to give up more mangos for a fish if



THE THEORY OF CONSUMER CHOICE

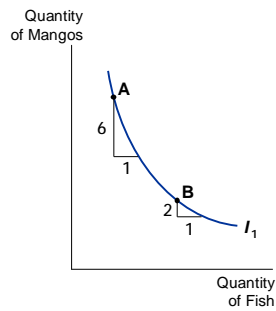
15

The Marginal Rate of Substitution

Marginal rate of substitution (MRS):

Hurley's MRS is

MRS falls as you move down along an indifference curve.



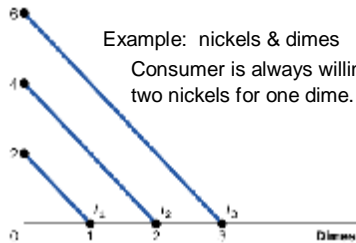
THE THEORY OF CONSUMER CHOICE

16

One Extreme Case: Perfect Substitutes

Perfect substitutes:

Nickels



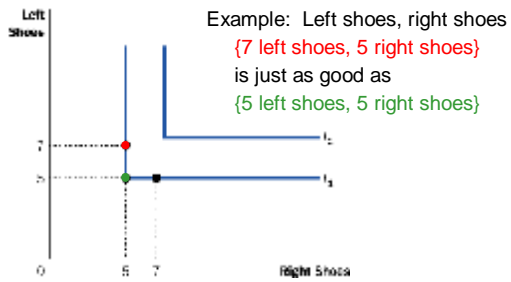
Example: nickels & dimes
Consumer is always willing to trade two nickels for one dime.

THE THEORY OF CONSUMER CHOICE

17

Another Extreme Case: Perfect Complements

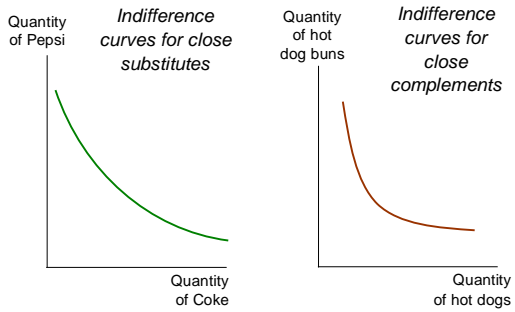
Perfect complements:



THE THEORY OF CONSUMER CHOICE

18

Less Extreme Cases: Close Substitutes and Close Complements

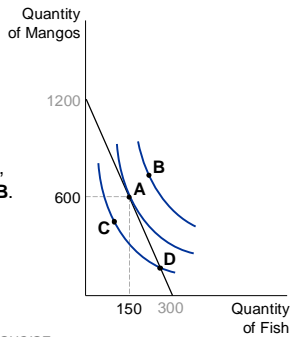


Optimization: What the Consumer Chooses

A is the optimum:

Hurley prefers **B** to **A**, but he cannot afford **B**.

Hurley can afford **C** and **D**, but **A** is on a higher indifference curve.



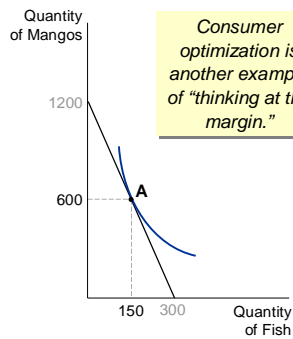
THE THEORY OF CONSUMER CHOICE

20

Optimization: What the Consumer Chooses

At the optimum,

$$MRS = P_F/P_M$$



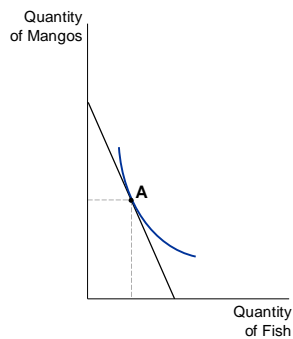
THE THEORY OF CONSUMER CHOICE

21

The Effects of an Increase in Income

An increase in income

If both goods are "normal," Hurley



THE THEORY OF CONSUMER CHOICE

22

ACTIVE LEARNING 3

Inferior vs. normal goods

§ An increase in income increases the quantity demanded of **normal goods** and reduces the quantity demanded of **inferior goods**.

§ Suppose fish is a normal good but mangos are an inferior good.

§ Use a diagram to show the effects of an increase in income on Hurley's optimal bundle of fish and mangos.

23

ACTIVE LEARNING 3
Answers

24

The Effects of a Price Change

Initially,
 $P_F = \$4$
 $P_M = \$1$

P_F falls to \$2

25

THE THEORY OF CONSUMER CHOICE

The Income and Substitution Effects

A fall in the price of fish has two effects on Hurley's optimal consumption of both goods.

- § **Income effect**
- § **Substitution effect**

Notice:

26

THE THEORY OF CONSUMER CHOICE

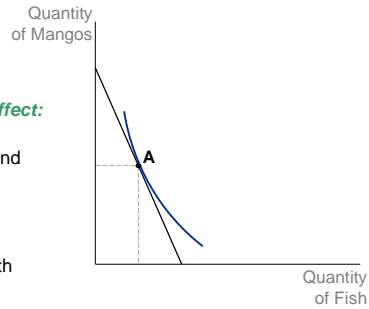
The Income and Substitution Effects

Initial optimum at **A**.

P_F falls.

Substitution effect:
from **A** to **B**,
buy more fish and
fewer mangos.

Income effect:
from **B** to **C**,
buy more of both
goods.



THE THEORY OF CONSUMER CHOICE

27

ACTIVE LEARNING 4

The substitution effect in two cases

Do you think the substitution effect would be bigger for substitutes or complements?

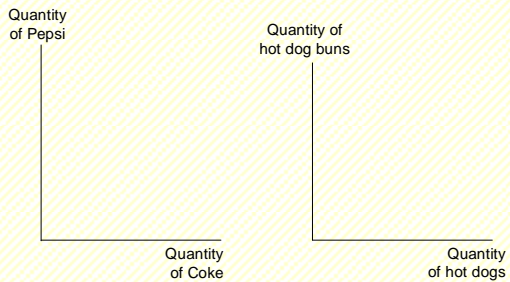
§ Draw an indifference curve for Coke and Pepsi, and, on a separate graph, one for hot dogs and hot dog buns.

§ On each graph, show the effects of a relative price change (keeping the consumer on the initial indifference curve).

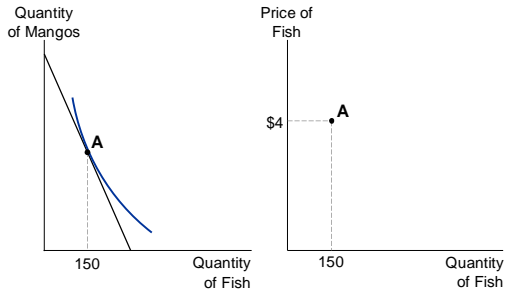
28

ACTIVE LEARNING 4

Answers



Deriving Hurley's Demand Curve for Fish



30

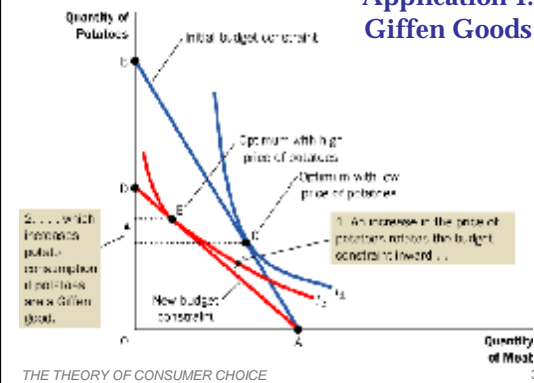
Application 1: Giffen Goods

- § Do all goods obey the *Law of Demand*?
- § Suppose the goods are potatoes and meat, and potatoes are an inferior good.
- § If price of potatoes rises,
 - § substitution effect:
 - § income effect:
- § If then potatoes are a **Giffen good**,

THE THEORY OF CONSUMER CHOICE

31

Application 1: Giffen Goods



THE THEORY OF CONSUMER CHOICE

32

Application 2: Wages and Labor Supply

Budget constraint

§ The relative price of an hour of leisure

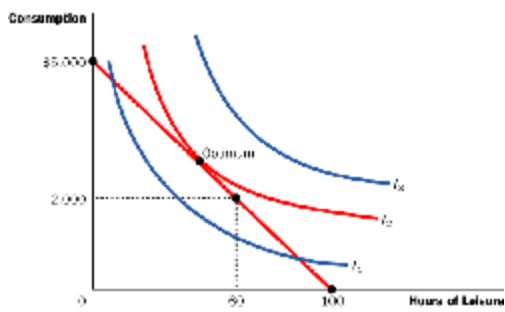
Indifference curve

§ Shows "bundles" of

THE THEORY OF CONSUMER CHOICE

33

Application 2: Wages and Labor Supply



THE THEORY OF CONSUMER CHOICE

34

Application 2: Wages and Labor Supply

An increase in the wage has two effects on the optimal quantity of labor supplied.

§ *Substitution effect (SE):*

§ *Income effect (IE):*

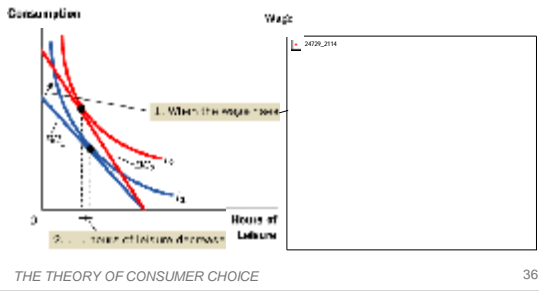
THE THEORY OF CONSUMER CHOICE

35

Application 2: Wages and Labor Supply

For this person,
 $SE > IE$

So her labor supply
increases with the wage

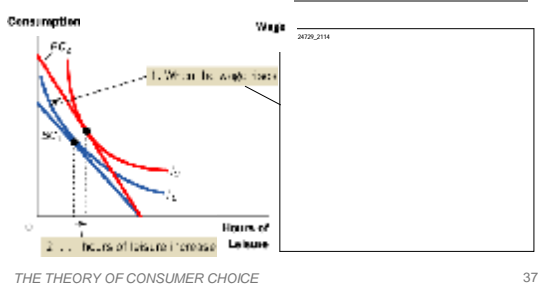


THE THEORY OF CONSUMER CHOICE

Application 2: Wages and Labor Supply

For this person,
 $SE < IE$

So his labor supply falls
when the wage rises



THE THEORY OF CONSUMER CHOICE

Could This Happen in the Real World???

Cases where the income effect on labor supply is very strong:

§ Over last 100 years, technological progress has increased labor demand and real wages. The average workweek fell from 6 to 5 days.

§ When a person wins the lottery or receives an inheritance, his wage is unchanged – hence no substitution effect.

But such persons are more likely to work fewer hours, indicating a strong income effect.

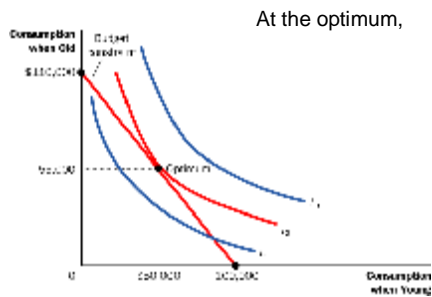
THE THEORY OF CONSUMER CHOICE

Application 3: Interest Rates and Saving

- § A person lives for two periods.
 - § Period 1: young, works, earns \$100,000
consumption = \$100,000 minus amount saved
 - § Period 2: old, retired
consumption = saving from Period 1
plus interest earned on saving
- § The interest rate determines

Application 3: Interest Rates and Saving

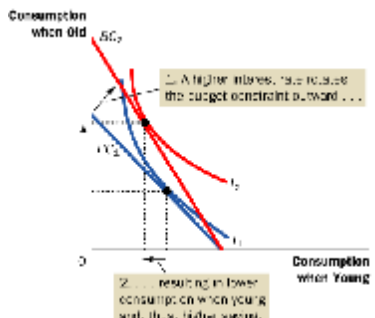
Budget constraint shown is for 10% interest rate.



ACTIVE LEARNING 5 Effects of a change in the interest rate

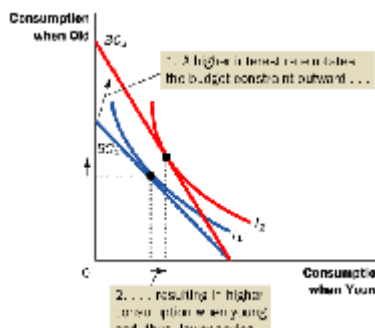
- § Suppose the interest rate rises.
- § Describe the income and substitution effects on current and future consumption, and on saving.

Application 3: Interest Rates and Saving



In this case, $SE > IE$ and saving rises

Application 3: Interest Rates and Saving



In this case, $SE < IE$ and saving falls

CONCLUSION:

Do People Really Think This Way?

- § People do not make spending decisions by writing down their budget constraints and indifference curves.
- § Yet, they try to make the choices that maximize their satisfaction given their limited resources.
- § The theory in this chapter is only intended as a metaphor for how consumers make decisions.
- § It explains consumer behavior fairly well in many situations and provides the basis for more advanced economic analysis.
