

# Comparative Statics I: Plotting Changes to Price and Income

Econ 50 | Lecture 8 | January 28, 2016

# Lecture

- Comparative statics: a conceptual introduction
- Four ways of looking at changes in prices and income
- Worked example: Cobb-Douglas

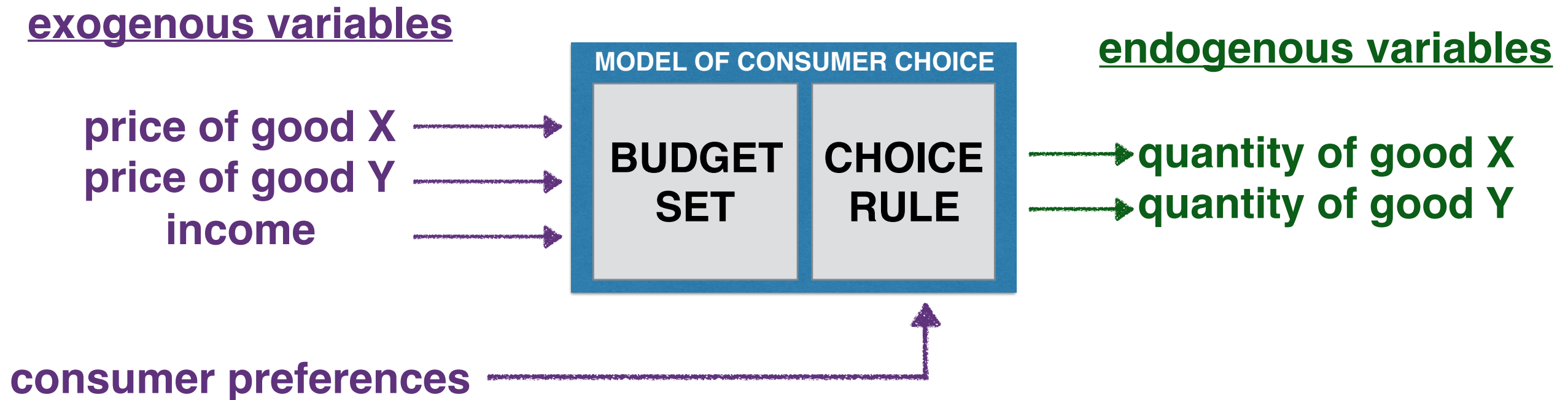
# Group Work

- Worked example: Quasilinear

# Part I

## Comparative Statics: A Conceptual Introduction

# Recall: Exogenous and Endogenous Variables



# Comparative Statics

- choose an **exogenous variable** of interest (price, income, etc.)
- hold all other **exogenous variables** constant
- examine how the **endogenous variables** change
- two potential plots:
  - exogenous variable vs. endogenous variable (e.g., demand curve)
  - multiple endogenous variables (e.g., price-consumption curve)

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## Part II

# Four Ways of Looking at Changes in Prices and Income

# Price Changes

- Price-Consumption Curves
- Demand Curves

# Income Changes

- Income-Consumption Curves
- Engel Curves

## Part III

# Worked Example: Cobb-Douglas

# Worked Example

- **Initial optimization:**

Solve for  $(x^*, y^*)$  as a function of  $P_x$ ,  $P_y$ , and  $I$ .

Find optimal consumption if  $P_x = 4$ ,  $P_y = 4$ ,  $I = 120$

- **Price-consumption curves:**

Hold  $P_y = 4$  and  $I = 120$ ; vary  $P_x$ ; plot optimal consumption bundles in X-Y space.

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- **Income-consumption curves:**

Hold  $P_x = 4$  and  $P_y = 4$ ; vary  $I$ ; plot optimal consumption bundles in X-Y space.

- **Demand curves:**

Hold  $P_y = 4$  and  $I = 120$ ; plot demand curve for X (quantity of X as a function of  $P_x$ ) X in P-Q space.

Hold  $P_x = 4$  and  $I = 120$ ; plot demand curve for Y (quantity of Y as a function of  $P_y$ ) in P-Q space.

- **Engel curves:**

Hold  $P_x = 4$  and  $P_y = 4$ ; plot consumption of X and Y as a function of income in I-Q space.