

# Chapter 4

## Consumer and Firm Behavior: The Work-Leisure Decision and Profit Maximization

---

---

---

---

---

---

---

---

### Plan

- Understanding basic microeconomic principles to build a simple macroeconomic model.
- One period model i.e., **STATIC** Decisions. NO SAVINGS.
- Many periods model i.e., **DYNAMIC** Decisions. PART III.

Slide 2

---

---

---

---

---

---

---

---

### Consumer **Optimization** Problem

- One decision to make:
  - How many units to eat (consume)?
  - How much time for leisure?
- The consumer supply labor and demand goods.
- Work-Leisure decision is affected by:
  - Preferences
  - Constraints

Slide 3

---

---

---

---

---

---

---

---

## Firm Optimization Problem

- How much labor to hire/fire ?
- The decision to maximize profit depends on:
  - available technology
  - market environment
- The firm demands labor and supply goods.

Slide 4

---

---

---

---

---

---

---

---

## Macro Outcome

Given the optimizing behavior of:

The consumer

The firm

Analyze how these economic agents will respond to changes in the environment they live in.

For example: a change in taxes  
a change in the wage rate

Slide 5

---

---

---

---

---

---

---

---

## The Representative Consumer (all are identical)

- Preferences
- Budget constraint
- Optimize (find best rational choice, **rational**)
- How to respond to a change in:
  - Non-wage income
  - Market wage rate

Slide 6

---

---

---

---

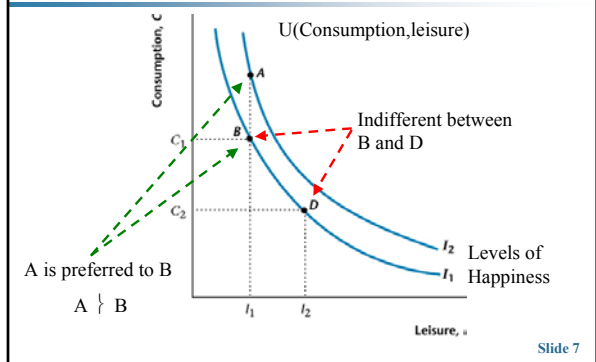
---

---

---

---

Figure 4-1 Indifference Curves (Preferences)




---

---

---

---

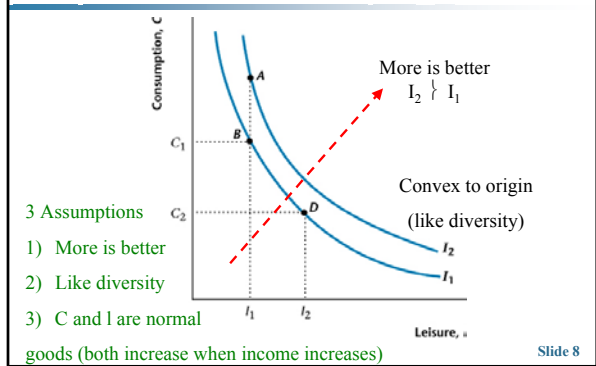
---

---

---

---

Figure 4-1 Indifference Curves (Preferences)




---

---

---

---

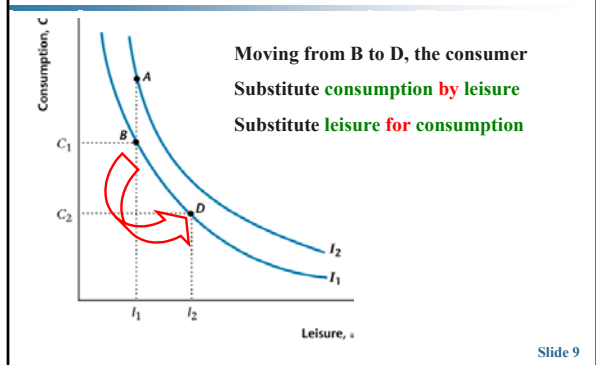
---

---

---

---

Moving along an Indifference Curve




---

---

---

---

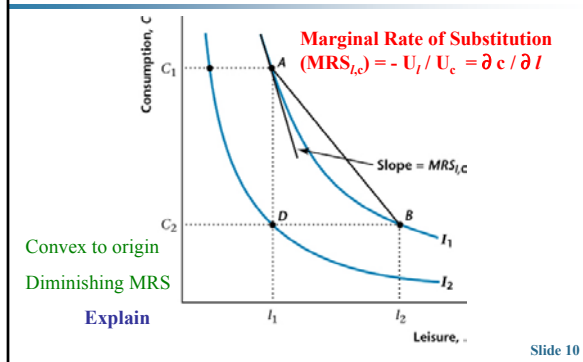
---

---

---

---

Figure 4-2 Properties of Indifference Curves




---

---

---

---

---

---

---

---

Budget Constraint

- No money Economy (Barter Economy).
- Two goods: consumption and labor time.
- Any trade must involve the exchange of goods for labor time.
- Time constraint:  $l + N^s = h \rightarrow N^s = h - l$   
Leisure time  $l$  + Work time  $N^s$  = Total time available
- Budget constraint:  $C = w N^s + \pi - T$   
real consumption = real disposable income

Slide 11

---

---

---

---

---

---

---

---

Breakdown of the Budget Constraint

- Budget constraint  $C = w N^s + \pi - T$
- $w$  : real wage
  - $w N^s$  : real wage income in units of goods
  - $\pi$  : (real profits) real dividends from firms.  
The consumer owns the firm
  - $T$  : real lump-sum taxes (does not depend on the actions of the agent being taxed).

Slide 12

---

---

---

---

---

---

---

---

## Real Expenditure and Real Disposable Income

$$C = w N^s + \pi - T$$

Substitute  $N^s = h - l$  into the budget

$$C = w (h - l) + \pi - T$$

Then multiply  $w$  by the parenthesis

$$C = wh - wl + \pi - T$$

Rearrange to get

$$C + wl = wh + \pi - T$$

$W$  is the price of leisure in terms of the cons' good.

$C + wl$ : the implicit real expenditure on  $c$  and  $l$

$wh + \pi - T$ : the implicit real disposable income

Slide 13

---

---

---

---

---

---

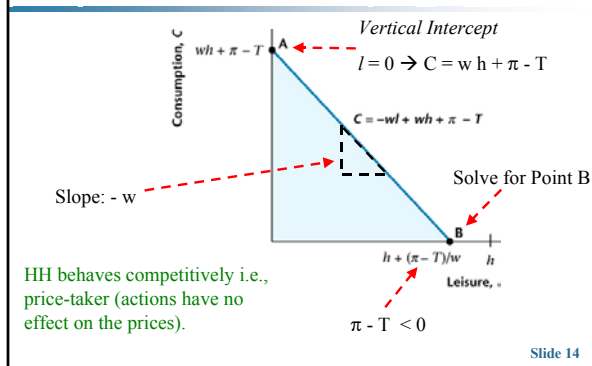
---

---

---

---

### Figure 4-3 Representative Consumer's Budget Constraint ( $T > \pi$ )




---

---

---

---

---

---

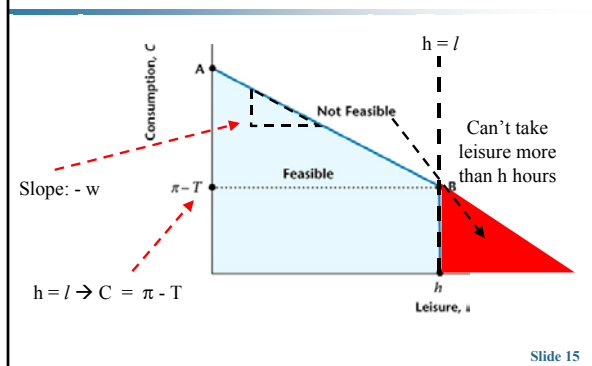
---

---

---

---

### Figure 4-4 Representative Consumer's Budget Constraint ( $T < \pi$ )




---

---

---

---

---

---

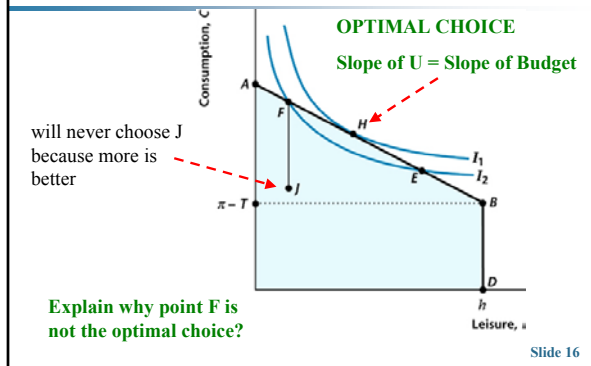
---

---

---

---

Figure 4-5 Consumer Optimization




---

---

---

---

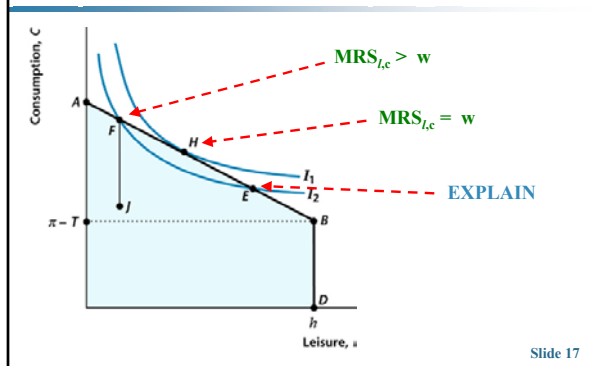
---

---

---

---

The Optimal Choice and the Slopes




---

---

---

---

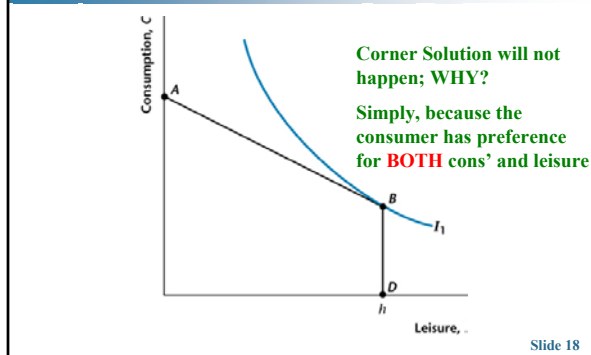
---

---

---

---

Figure 4-6 The Representative Consumer Chooses not to Work




---

---

---

---

---

---

---

---

## The Game

Starting from an (equilibrium) optimal choice  
how does the consumer respond to changes in:

- Real Dividend Income minus Taxes
  - Example: tax cut
- Real Wage

Slide 19

---

---

---

---

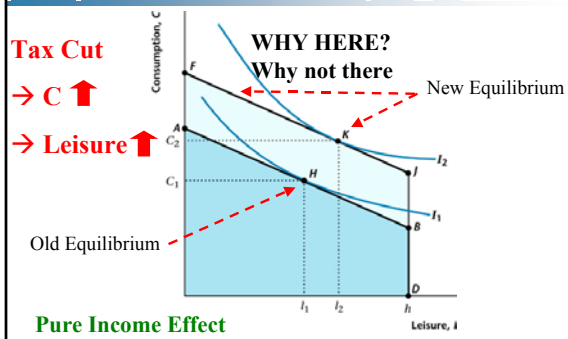
---

---

---

---

Figure 4-7 An Increase in the Consumer's Dividend Income



Slide 20

---

---

---

---

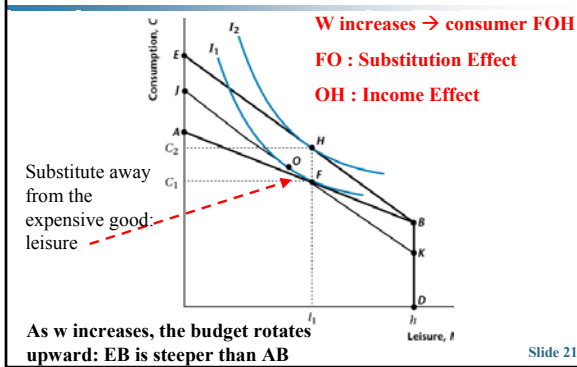
---

---

---

---

Figure 4-8 Increase in the real Wage Rate  
Income and Substitution Effects



Slide 21

---

---

---

---

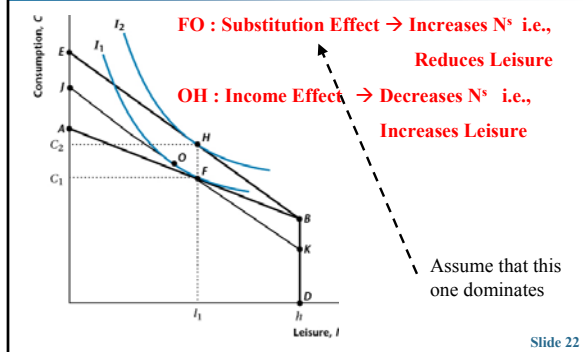
---

---

---

---

### Effect of Real Wage on Labor Supply




---

---

---

---

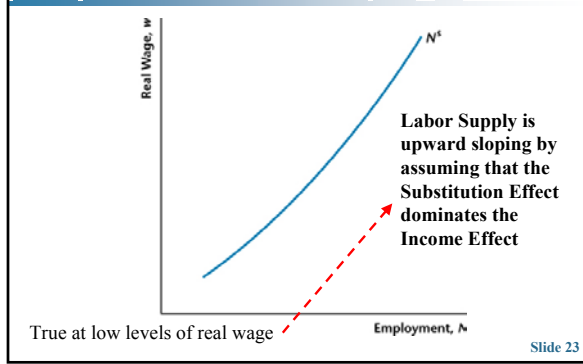
---

---

---

---

### Figure 4-9 Labor Supply Curve




---

---

---

---

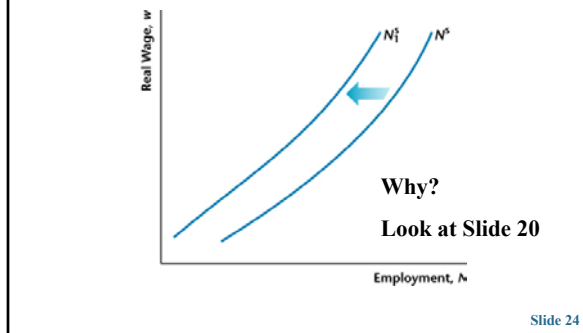
---

---

---

---

### Figure 4-10 Effect of an Increase in Dividend Income or a Decrease in Taxes




---

---

---

---

---

---

---

---

# THEORY CONFRONTS DATA

## Empirical Evidence

---

---

---

---

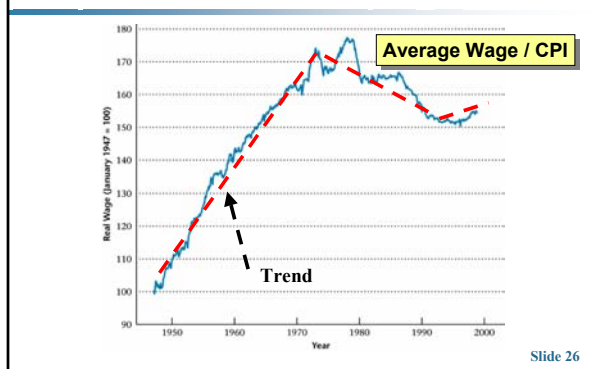
---

---

---

---

Figure 4-12 Real Wage in Manufacturing, 1947-1998



---

---

---

---

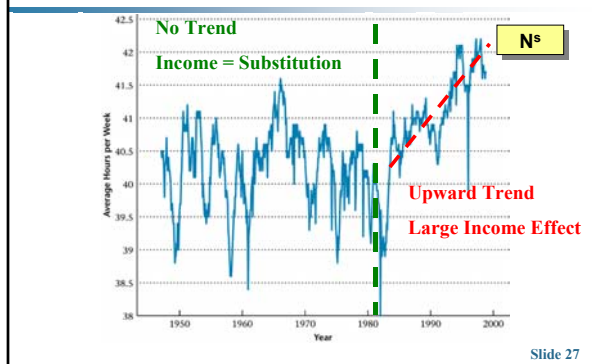
---

---

---

---

Figure 4-13 Average Hours per Week in Manufacturing, 1947-1998



---

---

---

---

---

---

---

---