

Consumption / Leisure Model

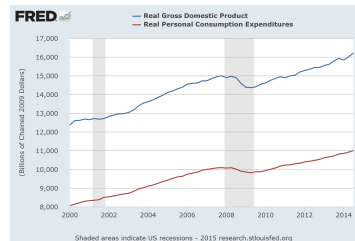
ECO 305: Intermediate Macroeconomics

Goals / Reading

- Goal: Develop a *microfounded* understanding of the following:
 1. Consumption demand
 2. Labor supply
- Reading: Williamson, Chapter 4, pages 98-119.

Microfounded Macroeconomics Modeling

- Starts with microeconomic behavior:
 - Individual optimizing behavior
 - Utility maximizing consumers
 - Profit maximizing producers (next module)
- Representative consumer: Model one consumer's behavior to represent many consumers.
 - Useful: Explains macroeconomic consequences to changing conditions or incentives
 - Drawbacks: Does not explain well income inequality or even unemployment

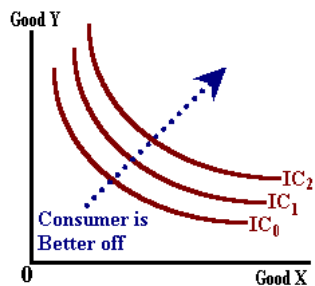


Utility

- **Utility:** quantity of satisfaction gained from consuming goods, services, or leisure.
- **Leisure:** any time spent not working for compensation.
- **Marginal utility (MU):** additional utility derived from one additional unit of a good, service, or leisure.
- Assumptions:
 - Marginal utility is always positive
 - **Diminishing marginal utility:** as consumption of something increases, the marginal utility decreases.
- What is the shape of a utility graph (consumption on horiz axis, utility on vertical)?
- What is the shape of a marginal utility graph? (consumption on horiz axis, MU on vertical)?

Indifference Curves

- **Indifference curve:** Alternative bundles consisting of quantities of two types of goods that yields the same level of utility.
- Indifference curves are downward sloping. Why?
- Indifference curves can never cross. Why not?
- Indifference curves are convex. Why?



Marginal rate of substitution

The **marginal rate of substitution** ($MRS_{X,Y}$): The quantity of good Y that a consumer is willing to give up to gain one more unit of good X .

Slope of the indifference curve = $-MRS_{X,Y}$:

$$MRS_{X,Y} = -\frac{MU_X}{MU_Y}$$

Consumption / Leisure Model

- Microfounded model of aggregate consumption and labor supply choices.
- Consumers derive utility from two goods: consumption and leisure.
- Both are *normal* goods.
- Consumers are limited by a budget constraint.
- Single period of time (no saving / borrowing).

Budget constraint

$$Pc = W(h - l) + \Pi - T \tag{1}$$

- P : Price of consumption good (aggregate price level)
- c : Real quantity of consumption
- W : Nominal wage rate
- h : total time available for work and leisure
- $h - l$: time spent working (total employment / labor supply)
- Π : non-wage income = dividends earned from owning stock in firms.
- T : Net lump sum taxes, net of transfers

Real Budget Constraint

The budget constraint, in *real terms* and slightly re-arranged:

$$c + wl = wh + \pi - t \tag{2}$$

- Lowercase letters are real variables
- Goods c and l appear on LHS
- Income appears on RHS

Utility Maximization

- Maximize utility subject to budget constraint.
- Get on the highest indifference curve that is affordable.
- Profit maximizing choice:

$$|MRS_{l,c}| = \frac{MU_l}{MU_c} = w \quad (3)$$

Increase in non-wage income

Examples:

- Examples: Property tax cut, lump sum tax rebate, increase in asset (stock market) values
- Budget constraint makes a parallel shift outward
- Optimal choices for consumption and leisure increase.

Increase in the Wage

- What happens to the budget constraint?
- Optimal choice for leisure is *indeterminate*.
- Optimal choice for consumption increases.

Substitution and Income Effects

- **Substitution effect:** the effect from *only* the increase in the relative price of the good, holding constant the effect price changes have on total purchasing power.
- **Income effect:** the effect from *only* the change in purchasing power that results from an increase in the price of a good.
- What are the income and substitution effects on consumption and leisure from an increase in wage?

You must be able to explain these *intuitively* and *show graphically*.