Consumption / Leisure Model
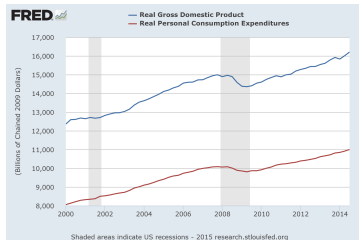
ECO 305: Intermediate Macroeconomics

- Goal: Develop a *microfounded* understanding of the following:

  1. Consumption demand
  2. Labor supply

- Reading: Williamson, Chapter 4, pages 96-116.

A **microfounded** macroeconomics model shows how aggregate
(macroeconomics) outcomes derive from individual optimizing
(microeconomic) behavior.

- **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.

1. Marginal utility is always positive
2. **Diminishing marginal utility:** as consumption of something increases, the marginal utility decreases.

Taken together, this means that as consumption increases,

- utility *increases*,
- but at a *decreasing rate*.

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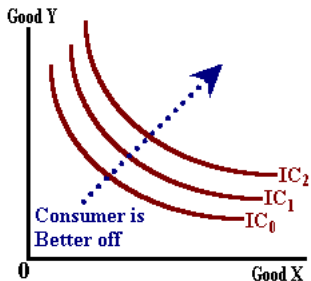
- The **marginal rate of substitution ($MRS_{X,Y}$):** The quantity of good Y that a consumer is willing to give up to gain one more unit of good X.

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

$$MRS_{X,Y} = -\frac{MU_X}{MU_Y} \tag{1}$$

- 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).

$$Pc = W(h - l) + \Pi - T \qquad (2)$$

- 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

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

$$c + wl = wh + \pi - t \tag{3}$$

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

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

$$|MRS_{l,c}| = \frac{MU_l}{MU_c} = w \qquad (4)$$

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.

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

- **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*.**