Consumption / Leisure Model
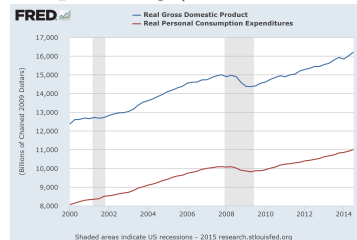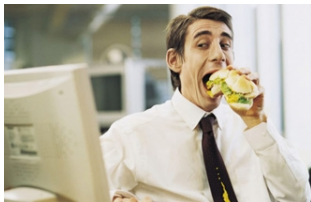
ECO 305: Intermediate Macroeconomics

Goals / Reading

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

    1. Consumption demand
    2. Labor supply

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

Microfoundations

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

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.

Common assumptions

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 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.

- Indifference curves are convex. Why?
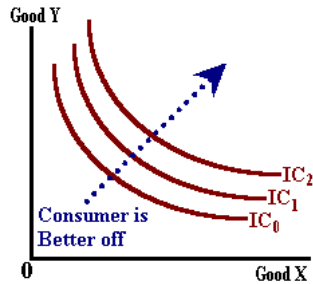
Marginal rate of substitution

- 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 $= -MRS_{X,Y}$

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

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).

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Budget constraint

$$Pc = W(h - l) + \Pi - T \tag{2}$$

- 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

Real Budget Constraint
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

Utility Maximization

- Maximize utility subject to budget constraint.

- Get on the highest indifference curve that is affordable.

- Profit maximizing choice:

$$|MRS_{l,c}| = \frac{MU_l}{MU_c} = w \tag{4}$$

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.*