Lecture 5

Household Behavior and Consumer Choice

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Principles of Microeconomics

Household Behavior

Perfect competition

- many firms, each small relative to the overall size of the industry, producing virtually identical products
- no firm is large enough to have any control over price

Perfect Knowledge

- households know the qualities and prices of everything available in the market
- firms have all available information concerning wage rates, capital costs and output prices

Households' basic decisions in output markets

1. How much of each product to demand
2. How much labor to supply
3. How much to spend and how much to save

Household Choice in Output Markets

Determinants of Household Demand

- price of the product
- household's income
- household's wealth
- prices of related products

- household's tastes & preferences
- expectations of future income, wealth and prices

The Budget Constraint

- limits imposed on choices by income, wealth and prices
- along and beneath the budget constraint lie all of the possible combinations of goods that a household can purchase
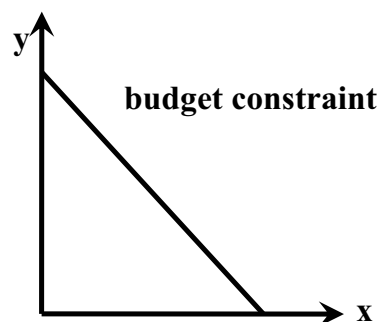
budget constraint

The Budget Constraint

When income allocated entirely towards only two goods, X and Y, income equals:

$$I = x*p_x + y*p_y$$

I = consumer's income
x = qty. of good X
p_x = price of good X
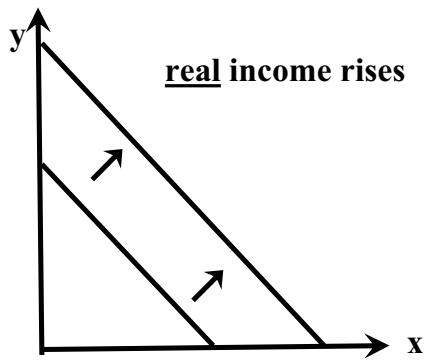y = qty. of good Y
p_y = price of good Y

Intercepts and Slopes

When x=0, only good y consumed and $I = y*p_y$ and $y = \dfrac{I}{p_y}$

When y=0, only good x consumed and $I = x*p_x$ and $x = \dfrac{I}{p_x}$

So when consumer moves from x=0 to y=0:

$$\frac{\Delta y}{\Delta x} = \frac{\dfrac{I}{p_y} - 0}{0 - \dfrac{I}{p_x}} = -\frac{p_x}{p_y} = \text{slope of budget constraint}$$

**Slope of budget constraint equals relative price of good x.**

Change in real income

y

real income rises

x

- **if the consumer's money income rises** (holding prices constant)**, OR**
- **if prices fall** (holding money income constant)**,**
- **_real_ income rises**
- **budget constraint shifts outward**

## Change in relative price

- **if the price of good X falls, the relative price of good X falls**
- **the maximum quantity of X he/she can consume increases**
- **budget constraint rotates outward**

y

$-\dfrac{p_x}{p_y} \downarrow$

x
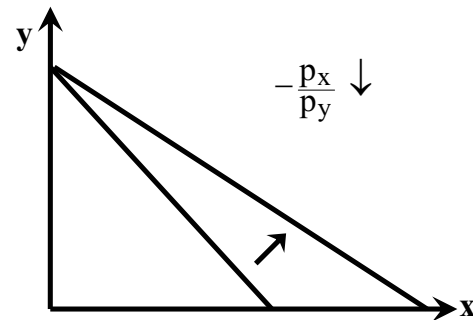
In the case depicted above real income also rises since one price falls while other remains constant.
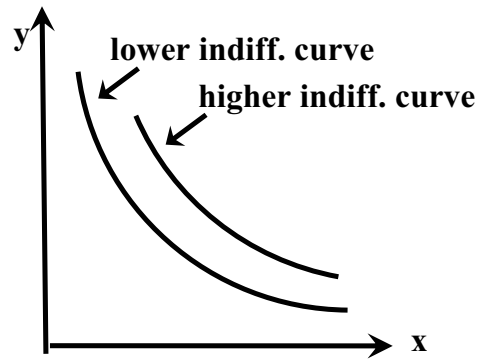
Utility

- **<u>Utility</u> is the satisfaction that a good or bundle of goods yield relative to their alternatives.**
- **The <u>Marginal</u> <u>Utility</u> of good X is the additional satisfaction gained by consuming one more unit of good X.**
- **<u>Diminishing</u> <u>Marginal</u> <u>Utility</u> – The more of one good consumed in a given period, the less satisfaction (utility) generated by consuming each additional (marginal) unit of the same good.**

Total Utility

x

Marginal Utility

x
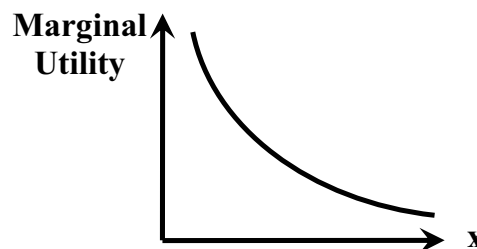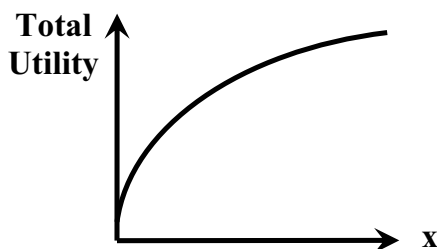
Why do demand curves slope down? ONE reason: Since marginal utility falls with each additional (marginal) **unit consumed, people are not willing to pay as much for each additional** (marginal) **unit.**

Indifference Curves

- **Consumption of different combinations of goods X and Y yield different levels of utility.**
- **All points along indifference curve give the consumer the same level of utility.**
  - Higher indiff. curves give the consumer more utility.
  - Lower indiff. curves give the consumer less utility.
- **Why are indiff. curves convex to the origin? To keep consumer's utility constant, you must compensate him/her with increasingly larger amounts of X for each additional unit of Y that you take from them – due to diminishing marginal utility.**

y

lower indiff. curve

higher indiff. curve

x

slope of an indifference curve:

$$\text{Marginal Rate of Substitution} \equiv \frac{MU_X}{MU_Y}$$

MU_X = marginal utility derived from the last unit of X consumed

MU_Y = marginal utility derived from the last unit of Y consumed

Allocating Income to Maximize Utility

Utility maximizing consumers spread out their expenditures until the following condition holds:

$$\text{Marginal Rate of Substitution} \equiv \frac{MU_X}{MU_Y} = \frac{p_X}{p_Y} \equiv \text{relative price of good X}$$

Such a point represents the highest level of utility they can reach given their income and the prices of goods X and Y.

Graphically, consumers maximize their utility at the point where their indifference curve just touches the budget constraint.

y

← indifference curve

utility max

x
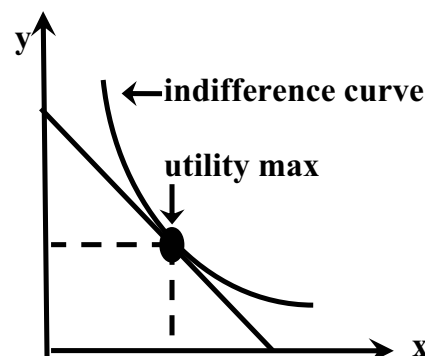
Income & Substitution
Effects of a Price Change

- **Income Effect** – occurs when real income (purchasing power) **changes holding the relative price constant.**
- **Substitution Effect** – occurs when the relative price changes holding real income (purchasing power) **constant.**

Income Effect on Normal Goods

When a consumer's money income rises or falls, his/her purchasing power is obviously affected, but here we want to analyze the case of price changes, so we'll focus on the case where money income is being held constant.

If goods X and Y are both "normal goods," then:
- **when the price of X falls, the income effect encourages the consumer to use his/her higher real income to buy more of both X and Y.**
- **when the price of X rises, the income effect encourages the consumer to reallocate his/her lower real income by buying less of both X and Y.**

Income Effect on Inferior Goods

If good X is an "inferior good," then when the price of good X falls, the income effect encourages the consumer to use his/her higher real income to buy *less* of X and more of Y.

Substitution Effect on Net Substitutes

When there are only two goods, they *must* be net substitutes. We'll leave a discussion of net complements to a more advanced course.

Since goods X and Y are net substitutes:
- **when the price of good X falls, it becomes more attractive relative to good Y, so the substitution effect encourages the consumer to buy more of X and less of Y.**
- **when the price of good X rises, it becomes less attractive relative to good Y, so the substitution effect encourages the consumer to buy less of X and more of Y.**

Gross Substitutes & Gross Complements

If goods X and Y are both normal goods and if the price of good X falls, the income effect and the substitution effect would both encourage the consumer to buy more of good X, but the gross (combined) effect on good Y is ambiguous.

If the price of good X falls and if Y is a normal good, then:
- the <u>income</u> <u>effect</u> encourages the consumer to buy more of good Y
- the <u>substitution</u> <u>effect</u> encourages the consumer to buy less of good Y

So the gross effect depends on which effect is larger.

- If the substitution effect is larger than the income effect, then:
    o the consumer will buy less of good Y
    o and good X is a <u>gross</u> <u>substitute</u> for good Y.
- If the income effect is larger than the substitution effect, then:
    o the consumer will buy more of good Y
    o and good X is a <u>gross</u> <u>complement</u> to good Y.

Household Choice in Input Markets

As in output markets, households face constrained choices in input markets.

Households' basic decisions in input markets

1. Whether to work
2. How much to work
3. What kind of a job to work at

These decisions are affected by:

1. The availability of jobs
2. Market wage rates
3. The skill possessed by the household

The Price of Leisure

- The wage rate is the price – or opportunity cost – of the benefits of either unpaid work or leisure.
- The decision to enter the workforce involves a trade-off between wages and the goods and services that wages will buy on the one hand, and the leisure and the value of non-market production on the other.
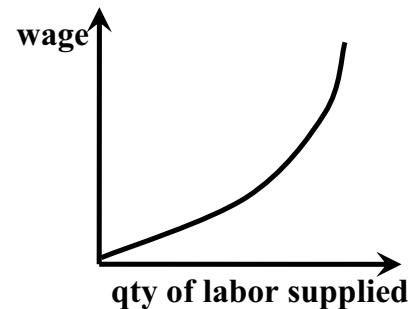
Labor Supply Curve

- Labor supply curve shows quantity of labor supplied at different wage rates.
- Its shape depends on how households react to changes in the wage rate.
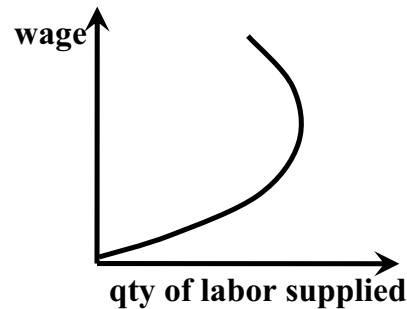
Substitution Effect of a Wage Change

- The substitution effect of a higher wage means that the relative price of leisure is now higher. Given the law of demand, the household will buy less leisure.
- When the substitution effect outweighs the income effect, the labor supply curve slopes upward.

Income Effect a Wage Change
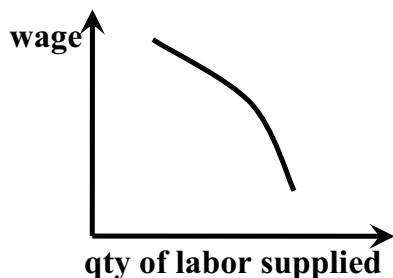
- The income effect of higher wage means that households can now afford to buy more leisure.
- When the income effect outweighs the substitution effect, labor supply curve bends backward.

Saving and Borrowing
Present vs. Future Consumption

Households can use present income to finance future spending (that is: save), or they can use future funds to finance present spending (that is: borrow).

Income & Substitution Effects of Higher Interest Rate

Income Effect	Substitution Effect
When the interest rate rises, households earn more on all previous savings, so the income effect encourages households to save less.	When the interest rate rises, the relative price of present consumption rises, so the substitution effect encourages households to save more.