Lecture #1 – Tuesday, September 8, 2003

BIG QUESTIONS IN ECONOMICS

- What?
  - What goods and services are to be produced?
  - Where do resources go?
- How?
  - How will goods and services be produced?
  - Lots of workers and few machines? Lots of machines and few workers?
  - Mass production or customized?
  - When do goods and services get produced? – weather limitations
  - Where do goods and services get produced?
- For whom?
  - Who gets the goods and services produced? – distribution

Objectives For An Economy

- equity – "fair"
- efficiency – scarcity of resources
- full employment
- growth – GDP, GDP/capita
- stability – inflation, exchange rate, balance of trade

SYSTEMS

Market Based System

- market – where buyers and sellers interact
- equilibrium between buyers and sellers determines what gets produced, prices, etc…
- money – medium for exchange
- government provides framework for this to operate in a mannerly fashion – law

Command Based System

- central authority determines what gets produced, quantity, price, where labourers work
- no competition – not efficient

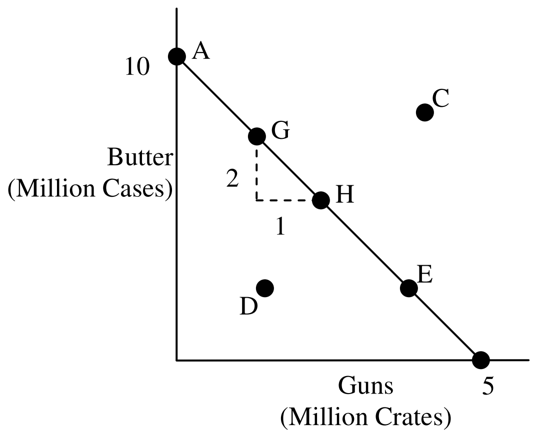
Mix System

- government intervention is beyond the market system

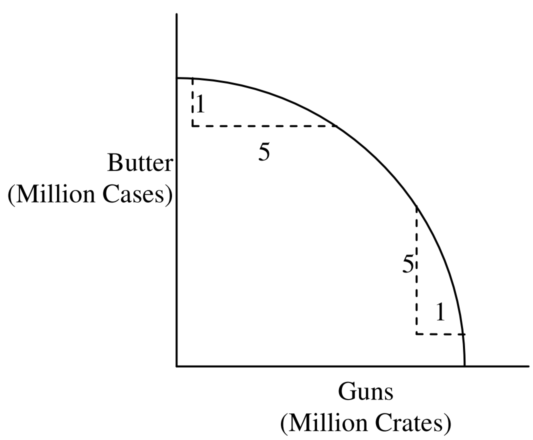
PRODUCTION POSSIBILITY CURVE (PPC)

Assumptions

- only two goods are produced: guns and butter
- fixed resources/inputs/capital/technology
- efficient



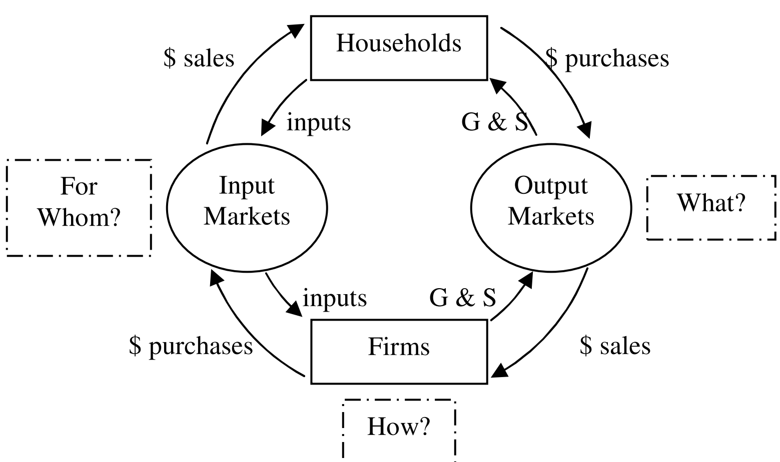
- linear – transformation is constant
- C – unobtainable
- D – underutilization, unemployment
- E – full employment
- G to H – sacrificed 2 butters for 1 gun – opportunity cost



- non-linear – hard to transform from butter to gun

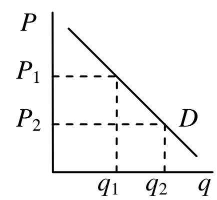
Lecture #2 – Monday, September 15, 2003

Market Economy



PARTIAL EQUILIBRIUM ANALYSIS (SINGLE MARKET): SUPPLY AND DEMAND

Demand For Good X

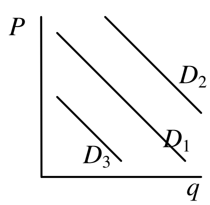


- P_x – $\dfrac{\Delta q_x^D}{\Delta P_x} < 0$
- Household income – $\dfrac{\Delta q_x^D}{\Delta I} > 0$ (normal good),

  $\dfrac{\Delta q_x^D}{\Delta I} < 0$ (inferior good)
- P_y, P_z – price of other goods – $\dfrac{\Delta q_x^D}{\Delta P_y} > 0$ (substitute),

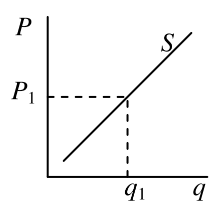
  $\dfrac{\Delta q_x^D}{\Delta P_z} < 0$ (complement)
- Tastes/preferences
- Expectations – what is going to happen in the future?

Aggregate Market Demand For Good X



- Shifting of the demand schedule
  - Household income
  - Prices of other goods
  - Tastes/peferences
  - Expectation

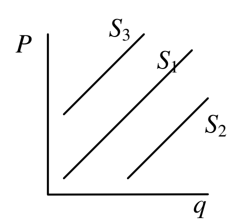
Supply For Good X



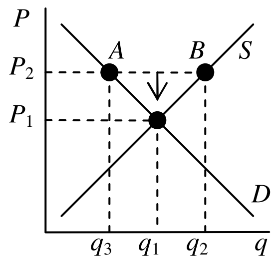
- P_x – $\dfrac{\Delta q_x^S}{\Delta P_x} > 0$
- Costs of inputs – $\dfrac{\Delta q_x^S}{\Delta P_i} < 0$
- Technology – more efficient
- P_y, – price of other goods
- Number of suppliers

Aggregate Market Supply For Good X

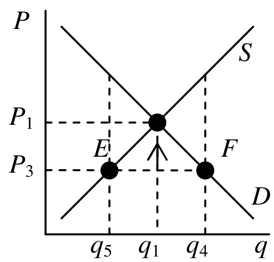
- Shifting of the supply
  - Cost of inputs
  - Technological advancements
  - Price of substitutes and complements
  - Number of suppliers



Equilibrium



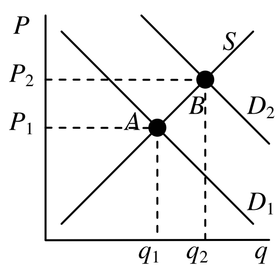
- At P_2, $q_2 > q_3$ – AB is excess supply
- P will decline until we reach P_1



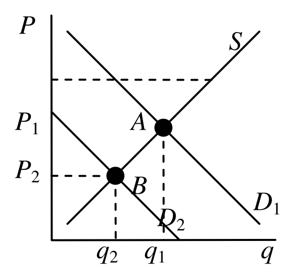
- At P_3, $q_4 > q_5$ – AB is excess demand
- P will rise until we reach P_1

"Laws" of Supply and Demand

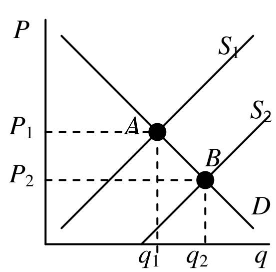
Increase in Demand



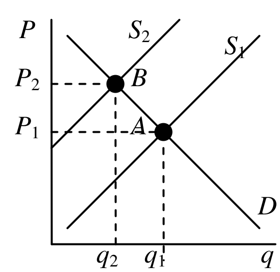
Decrease in Demand



Increase in Supply

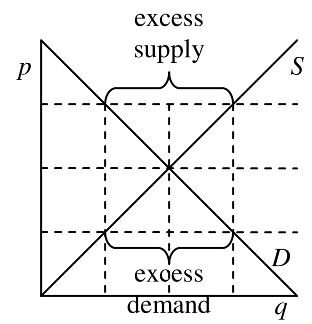


Decrease in Supply



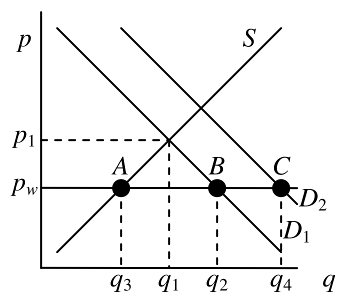
Lecture #3 – Monday, September 22, 2003

PARTIAL EQUILIBRIUM ANALYSIS (SINGLE MARKET): SUPPLY AND DEMAND (CONTINUED)



Example

Soybeans are traded on the international market where a “world” price is established. Canadian transactions have no influence on the “world” price. (i.e. Canadians can buy or sell at the “world” price) Canada is initially an importer of soybeans.
Soybeans are the secret ingredient in McBurgers; the demand for McBurgers in Canada increases.

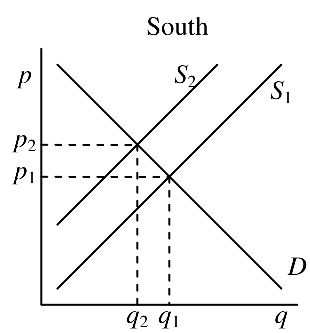


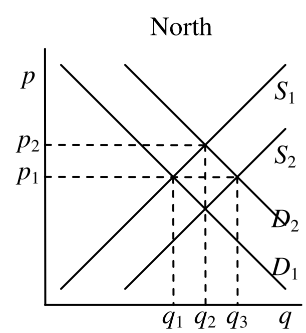
- q_2 – quantity demanded in Canada once world trade is open
- AB – imports
- When D_1 shifts to D_2 – price is the same, import increases to AC

ALL MARKETS: GENERAL EQUILIBRIUM ANALYSIS

Example

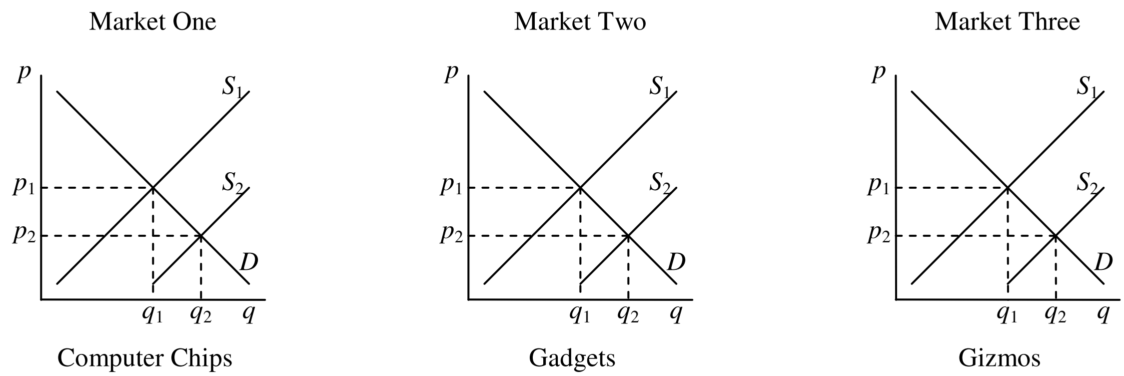
Widgets are sold in both the South and the North, and are easily transported between the two locations. There is an increase in demand for widgets in the North (the shock in Market One). Suppliers of widgets in the South see an opportunity to sell more widgets in the North by redirecting to the North some widgets originally destined for the South (the “second order” impact in Market Two).





Example

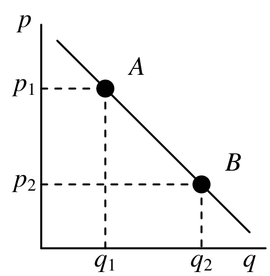
There has been a technological improvement in the production of computer chips (Market One). Computer chips are used as an input for both gadgets (Market Two) and gizmos (Market Three).



ELASTICITY

- Sensitivity of one variable to another – $\varepsilon = \frac{\%\Delta V}{\%\Delta W}$
- Price elasticity of demand – $\varepsilon_D = -\frac{\%\Delta q_D}{\%\Delta p}$
  - If >1 – sensitive
  - If <1 – not sensitive

CONCEPTS OF ELASTICITY

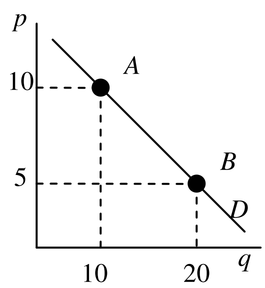


- If $p\downarrow$ – $\Delta p\downarrow$, $\Delta q\uparrow$
- If $p\uparrow$ – $\Delta p\uparrow$, $\Delta q\downarrow$
- $TR = p \times q$

- $\varepsilon_D = -\frac{\%\Delta q_D}{\%\Delta p}$
  - When $p\downarrow$ – $\Delta p\downarrow$, $\Delta q\uparrow$
    - If $\%\Delta q_D > \%\Delta p$, $\varepsilon_D > 1$, $TR\uparrow$ – elastic
    - If $\%\Delta q_D = \%\Delta p$, $\varepsilon_D = 1$, TR is constant – unit elastic
    - If $\%\Delta q_D < \%\Delta p$, $\varepsilon_D < 1$, $TR\downarrow$ – inelastic
  - When $p\uparrow$ – $\Delta p\uparrow$, $\Delta q\downarrow$
    - If $\%\Delta q_D > \%\Delta p$, $\varepsilon_D > 1$, $TR\downarrow$ –
    - If $\%\Delta q_D = \%\Delta p$, $\varepsilon_D = 1$, TR is constant

- If $\%\Delta q_D < \%\Delta p$, $\varepsilon_D < 1$, $TR\uparrow$

Calculate Elasticity of Demand

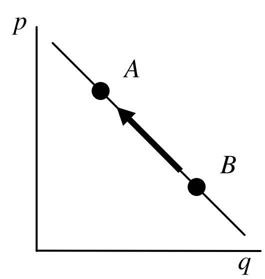


- $\Delta p = \$5$
  $\Delta q = 10$
- $\varepsilon_D = -\dfrac{\%\Delta q_D}{\%\Delta p}$
  $= 1$
- $TR_A = \$100$
  $TR_B = \$100$

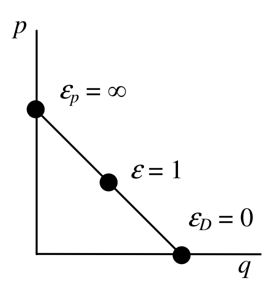
Arc Elasticity: Midpoint Formula

$$\varepsilon_D = -\frac{\Delta q_D / \text{Avg } q_D}{\Delta p / \text{Avg } p}$$

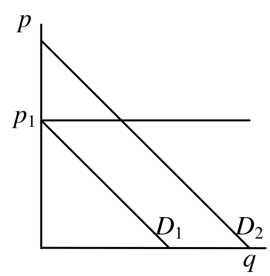
Point Elasticity



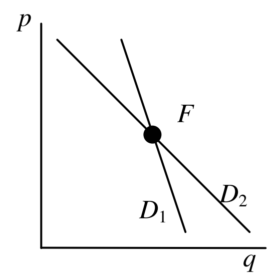
$$\varepsilon_D = -\frac{\Delta q_D / q_D}{\Delta p / p} = -\frac{\Delta q_D}{\Delta p} \times \frac{p}{q_D} = -\frac{1}{\text{slope of } D} \times \frac{p}{q_D}$$



- Point elasticity is not constant on a linear schedule



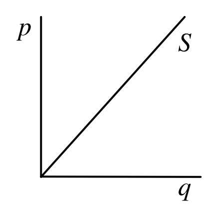
- D_2 has a lower elasticity at p_1



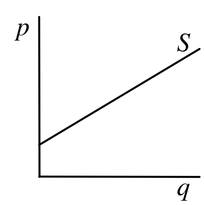
- At F, $\frac{p}{q}$ is the same
- At F, $\varepsilon_{D_1} < \varepsilon_{D_2}$
- At F, D_1 is less elastic
- At F, D_2 is more elastic

ELASTICITY OF SUPPLY

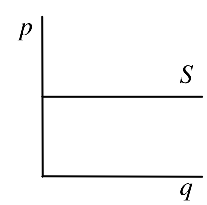
- Arc elasticity: $\varepsilon_S = \dfrac{\Delta q_S / \text{Avg } q_S}{\Delta p / \text{Avg } p}$
- Point elasticity: $\varepsilon_S = \dfrac{\Delta q_S}{\Delta p} \times \dfrac{p}{q_S}$



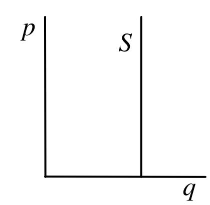
- constant elasticity everywhere



- ε_S falling as it goes out



- $\varepsilon_S = \infty$



- $\varepsilon_S = 0$

OTHER ELASTICITY CONCEPTS

- Income elasticity of demand: $\varepsilon_I = \dfrac{\%\Delta q_D}{\%\Delta I}$
  - >0 – normal good
  - <0 – inferior good
  - >1 – luxury goods

- Cross price elasticity of demand: $\varepsilon_{x/y} = \dfrac{\%\Delta q_D^y}{\%\Delta p^x}$
  - >0 – substitutes

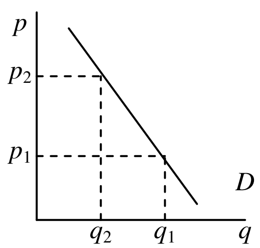
- <0 – complements
- =0 – neutral

Lecture #4 – Monday, September 29, 2003

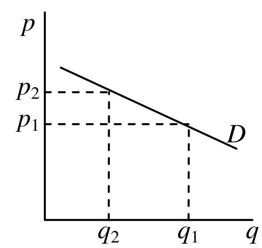
TIME PERIOD

- Shorter time period – less elastic (demand and supply)
- Longer time period – more elastic (demand and supply)
  - Suppliers need more time to increase capacity

ADMINISTERED PRICES



- Relatively inelastic – $P\uparrow$, $TR\uparrow$

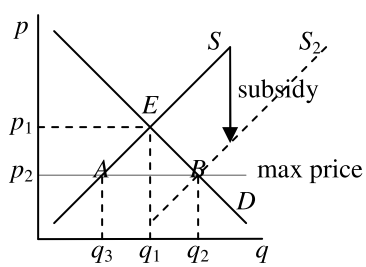


- Relatively inelastic – $P\downarrow$, $TR\uparrow$

INTERVENTIONS IN COMPETITION MARKETS

- Maximum price – "price ceiling"
- Minimum price – "price floor"
- Quota – "production cap"
- Tax
- Subsidy – negative of a tax

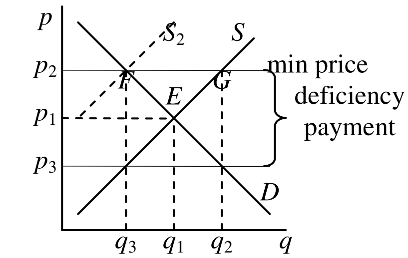
Maximum Price



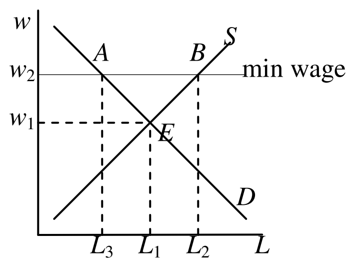
- Equilibrium doesn't change – market forces still push up to E
- Excess demand AB

- Problems with excess demand
  - Lottery system – people will see the tickets – not really held at the maximum price
  - Black market – sold illegally at a higher price
- Subsidy – shifts supply down

Minimum Price

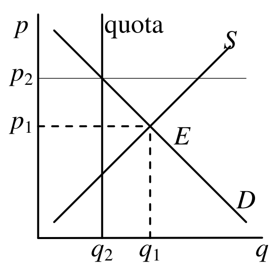


- Equilibrium doesn't change – market forces still push down to *E*
- Excess supply *FG*
- Government buys excess supply *FG* – sells it at super low price
- Deficiency payment plan – government guarantees P_2



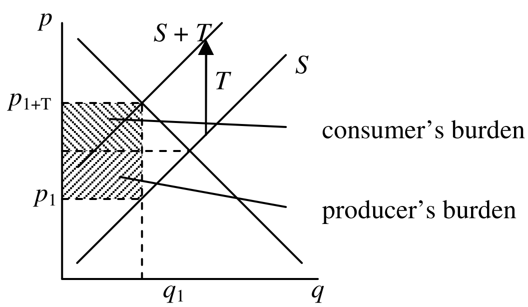
- If competitive – *AB* = excess supply = unemployment
- current employees benefit at the cost of squeezed out group

Quota System



- Solves two problems for government
  - no deficiency payment plan
  - don't have to buy excess supply
- profits ↑
- Quota itself becomes valuable (licences) – guarantees profits
- If everyone cheats, quota doesn't work

Tax Incidence

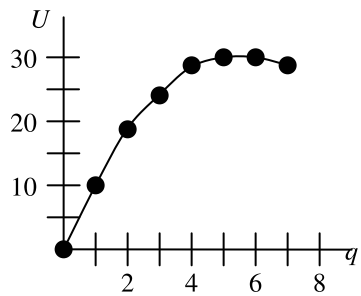


Lecture #5 – Monday, October 6, 2003

UTILITY THEORY

- Assumptions:
  - Consumers wishes to maximize satisfaction/happiness from the consumption of goods and services
  - Units of measurement: utils/”jollies”
  - Measurement of utility can be cardinal (similar to height, weight, distance) or ordinal (rating system)
  - Consumers can tell us how satisfaction is related to units consumed
  - Consumers derives less incremental (marginal) satisfaction from additional units of consumption

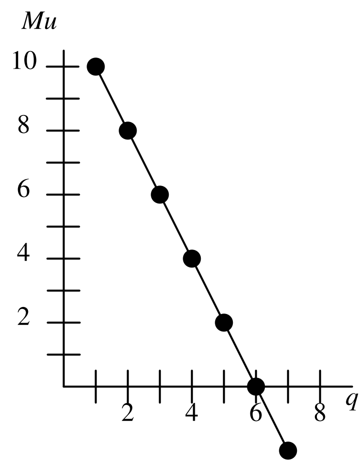
ONE-GOOD UTILITY THEORY



q (units)	Total Utility (Jollies)	MU
0	0	
1	10	10
2	18	8
3	24	6
4	28	4
5	30	2
6	30	0
7	28	-2

Definition

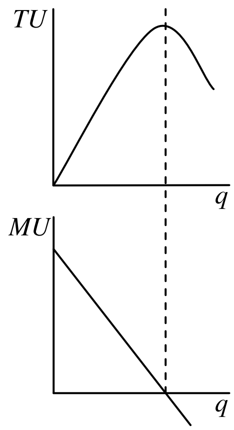
- $MU = \frac{\Delta TU}{\Delta q}$ = the change in total utility from consuming one additional (marginal) unit of theat good
- Law of diminishing incremental (marginal) satisfaction



DERIVATION OF THE DEMAND CURVE/SCHEDULE

Step 1

- If $p = 0$, the consumer will maximize satisfaction (utility) by consuming to the point where $MU = 0$



- Conclusion: If $p = 0$, $q = 6$ – first point in demand curve

Step 2

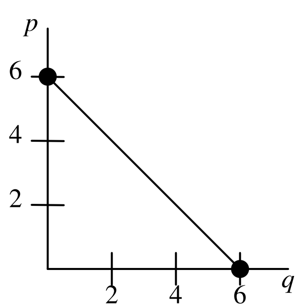
- $p = 1$; assume that $1 is worth 2 Jollies of satisfaction

- A consumer will not spend money on the good unless he/she gets at least 2 Jollies of satisfaction from the marginal unit consumed
- Opportunity cost of $1 is 2 Jollies
- This is true for the first, second, third…unit (assuming marginal utility of money is constant)

- So when $p = 1$, the utility maximizing consumer will consume 5 units of widgets

Step 3

- When $p = 1$, $q = 4$



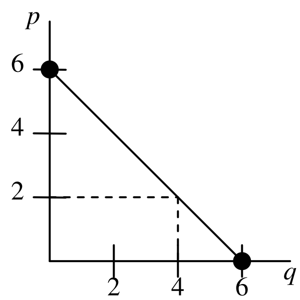
p	q
0	6
1	5
2	4
3	3
4	2
5	1
6	0

- Discussion: Why is the demand curve negatively sloped?
  - Law of diminishing marginal utility
  - As you consume more an more, you pay less and less

Consumer Surplus

- A concept derived from utility theory
- Reflects the fact that in a market economy, a good (usually) sells for the same price for every unit purchased/consumed
- Yet, we know from diminishing marginal utility, earlier units are valued more
- So there is a benefit accruing to consumers – they get to buy (at $p = \$1$) 5 units, but every unit was worth more than or equal to that in terms of Jollies
- This difference is called "consumer surplus"

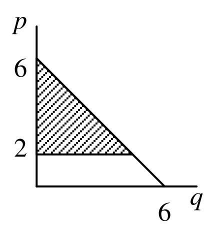
- Consider the demand schedule



- If consumer wants to consume only 1 unit, he/she is prepared to pay \$5 (\$5 = 10 Jollies and 1 widget = 2 Jollies)

- Suppose $p = \$2$
- Preliminary <u>estimate</u>

q	willing to pay	actual	surplus
1	\$5	\$2	\$3
2	\$4	\$2	\$2
3	\$3	\$2	\$1
4	\$2	\$2	<u>\$0</u>
			\$6



- $\text{Area} = \frac{1}{2}(\text{base})(\text{height}) = \frac{1}{2}(4)(4) = \$8$
- Consumer surplus = the area under the demand curve and above the price line

Two-Good Utility Theory

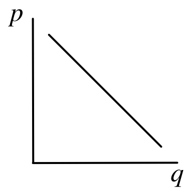
- Recognizing that people consume more than one good/service – introduce the concept of income
- $\frac{MU_x}{p_x} = \frac{MU_y}{p_y}$

Use Two-Good Utility Theory To Derive Demand Schedule

- Equilibrium: $x = 3$, $y = 6$ ($p_x = 2$, $p_y = 1$)

- Suppose that P_x goes down to \$1
- If I don't adjust consumption, $\frac{12}{1} = \frac{MU_x}{p_x} > \frac{MU_y}{p_y} = \frac{6}{1}$ – needs to consume more X

- As $p_x \downarrow \Rightarrow q_x^D \uparrow$



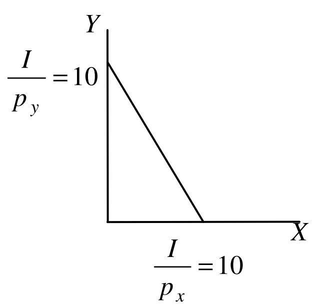
Lecture #6 – Monday, October 20, 2003

INDIFFERENCE THEORY

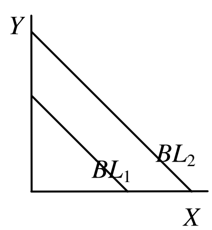
- Non-measurable utility
- Income is a constraint
- Can explain unusual positively sloped demand curve

Budget Line/Constraint

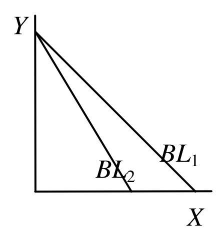
- Two goods: X and Y
- Income: \$100
- $p_x = \$10$, $p_y = \$5$



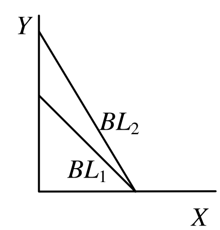
- $I = p_x X + p_y Y$
- $\text{Slope} = -\frac{I/p_y}{I/p_x} = -\frac{p_x}{p_y} = -\frac{\$10}{\$5} = -2$



- $I\uparrow$; p_x, p_y, same



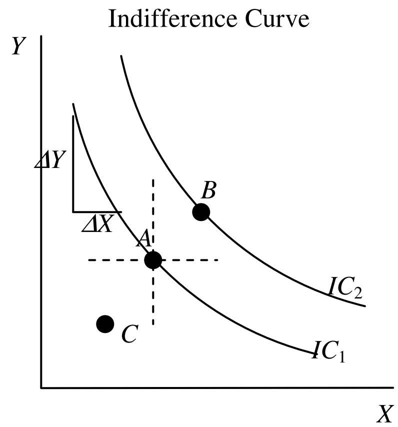
- $p_x \uparrow$; I, p_y, same



- $p_y \downarrow$; I, p_x, same

Indifference Map

- Rating: better than, same as, less than
- More is preferred to less ($MU > 0$)
- Consumers are rational, consistent



- *B* can't have the same amount of satisfaction – more is preferred
- Negatively sloped – give up some *Y* for *X*, but still same level of satisfaction

- Definition: Every point on the indifference curve have the same level of satisfaction

- Slope of *IC*:

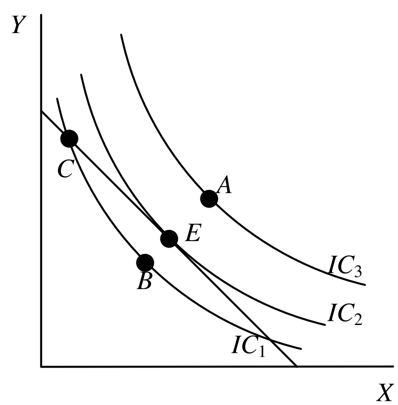
$$\Delta U = 0 = \Delta X \frac{\Delta TU}{\Delta X} + \Delta Y \frac{\Delta TU}{\Delta Y}$$
$$0 = \Delta X \cdot MU_x + \Delta Y \cdot MU_y$$
$$\frac{\Delta Y}{\Delta X} = -\frac{MU_x}{MU_y}$$

Marginal Rate of Substitution (*MRS*)

- $MRS = \left|\text{slope of } IC\right| = \dfrac{MU_x}{MU_y}$

Equilibrium

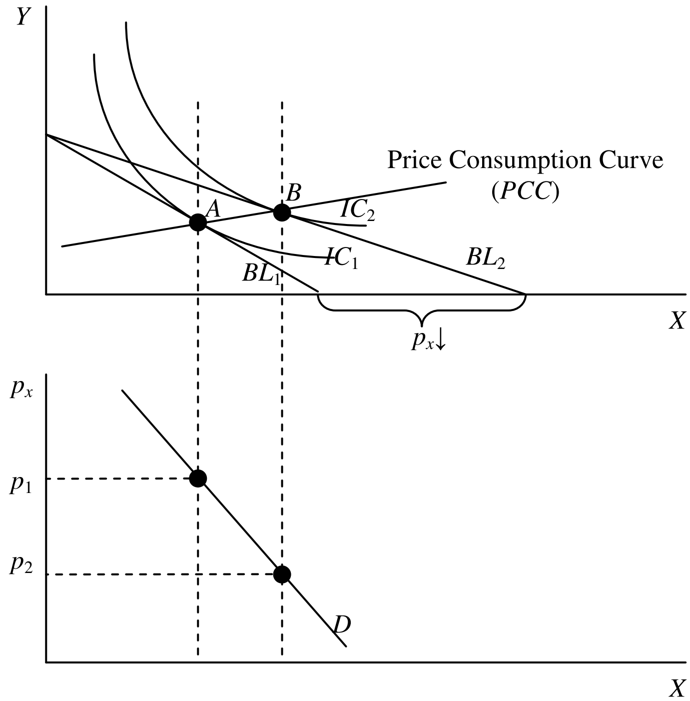
- Max satisfaction subject to budget



- $\text{slope of } BL = \text{slope of } IC$
  $$-\frac{p_x}{p_y} = -\frac{MU_x}{MU_y}$$

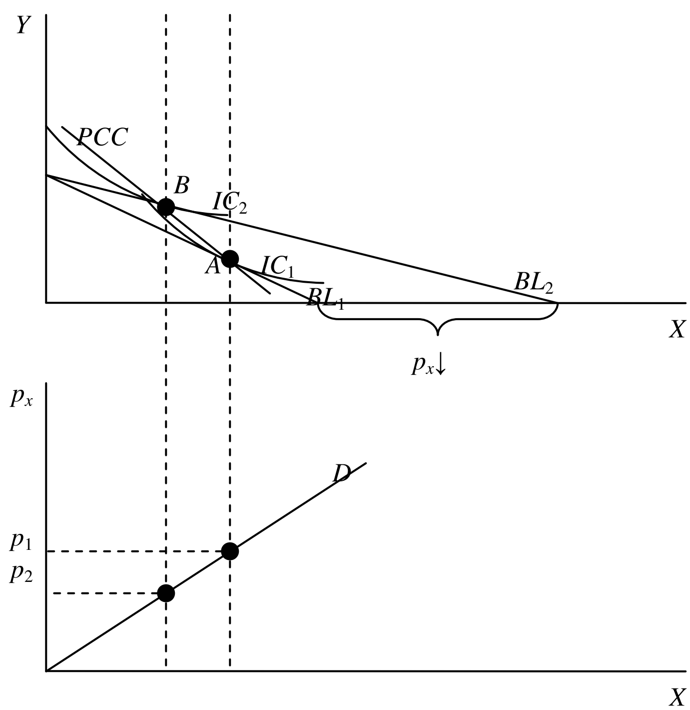
- In Utility Theory, $\dfrac{MU_x}{p_x} = \dfrac{MU_y}{p_y}$

Deriving Demand



- Normal good X

Positively Sloped Demand Schedule



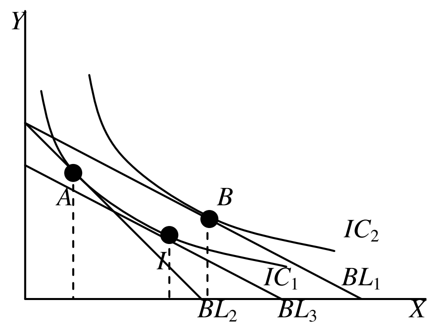
- Inferior good X

Lecture #7 – Monday, October 27, 2003

INCOME EFFECTS AND SUBSTITUTION EFFECTS

- $P_x \downarrow, X \uparrow \Rightarrow \Delta X > 0$
- $\Delta X = \Delta X_{IE} + \Delta X_{SE}$

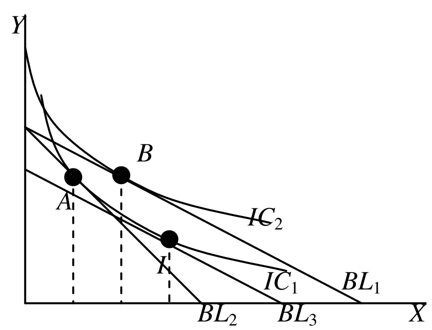
- Income effect – independent of the change in $\frac{p_x}{p_y}$.
- Substitution effect – independent of the impact on real income.



- SE: A to I
- IE: I to B

- X is a normal good.

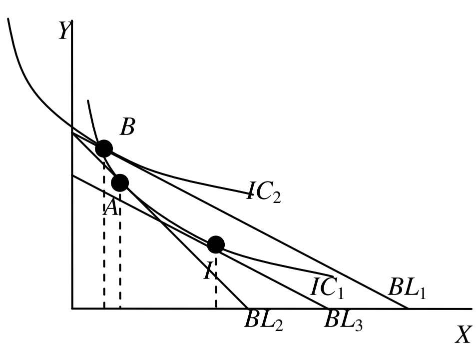
- SE is always negative – $\frac{\Delta X_{SE}}{\Delta p_x} < 0$.



- $p_x \downarrow$, X inferior, $SE > IE$

- SE: A to I
- IE: I to B

- Negatively-sloped demand curve.



- $p_x \downarrow$, X inferior, $SE < IE$

- SE: A to I
- IE: I to B

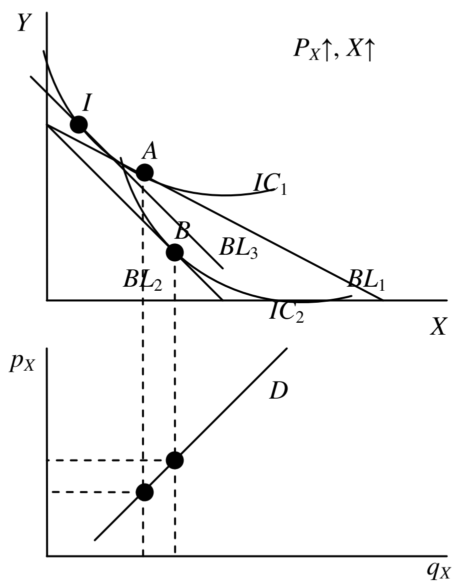
- Positively-sloped demand curve.

Table: P_x↑

	SE	IE	Total	Slope of D
X normal	*X*↑	*X*↑	*X*↑	-
X inferior, *SE* > *IE*	*X*↑	*X*↓	*X*↑	-
X inferior, *SE* < *IE* ("Giffen Good")	*X*↑	*X*↓	*X*↓	+

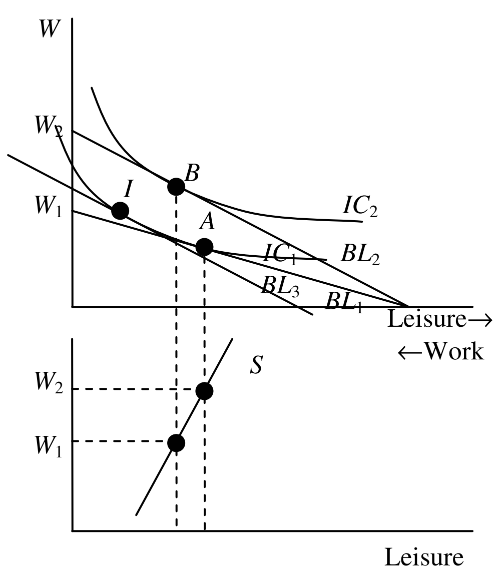
Lecture #8 – Monday, November 3, 2003

Giffen Good Case



- Inferior good – P_X↑, X↑.
- Positively sloped demand schedule.
- IE > SE.

Labour Market



- Wage rate rose.

- *A* to *I* = substitution effect.
- *I* to *B* = income effect.
- SE > IE – work more1.