9/9/2009 3:03:00 PM

Wednesday 09, 2009

Website access
Username: pesando
Password: windsor

The Economic way of thinking

The economic problem : Scarcity requires Choices
Economic Decision – Making:
Opportunity cost
Marginal Analysis
Compare additional benefits with additional cost.
Ignore sunk Costs.
People Respond to incentives

Scarcity

Individual
Limited budget
Limited time

Society
Limited resources to produce goods

<u>Choices</u>

Economics – study of how rational people make choices

Insights

Opportunity cost and
Marginal analysis
Logycal thinking in economic context

Apparently "non- economic" problems are economic problems.

Opportunity cost

The opportunity cost of an action is what one forgoes (gives up) by not taking the best alternative action.

Insights:

The question "Should I do X?" should be replaced by

"Should I do X or Y where Y is the most highly value alternative to X ?"

Opportunity cost includes time cost as well as money cost

Examples:

The opportunity cost of attending University for 1 year

If the best alternative is fulltime work at $20k

Per year, the op. cost

Tuition – 8000

Forgone earnings 20000

28000

If the best alternative is fulltime work at $40k

Per year, the op. cost

Tuition – 8000

Forgone earnings 40000

48000

Room and board $ 7000

Include in Opportunity Cost?

No, if student would have to pay for room and board if working full-time

The opportunity cost of attending a movie

If the best alternative is working at a part time job at $10 per hour, the op. cost is:

Ticket price: 12

Foregone Earnings: 20 (2h)

32

If the best alt. is going for a walk then the opt cost:

Ticket price: 12

Stisfaction from walk: monetary value exceeds $20 by implication

20 (2h)

>32

Receive Free Concert Ticket (2 hours)
Best alternative
Dinner at a favorite restaurant, which you value at $100 (2h)
Cost of restaurant meal is $75

3. What is opportunity cost of attending concert ?
Answer :$25

Monetary value $100
- meal is -75

$ 25

Measuring opportunity cost.

Action taken: direct costs (each dollar spent has oppt. Cost of one dollar)

PLUS

Next best alternative : Dollar amount or valur assigns by you l
ess direct cost.

Applications:
Should this individual operate a hot dog stand?

Revenues at $2.5 = $250
Direct Costs (per 8h daily)
Rent for stand – 75
Hot dogs, buns- 75

150
Difference 100 (250-150)

Missing information

Opportunity cost of individual's time
If could earn $15 per hour, opportunity cost of $120 for 8h
Since 120 exceeds 100, should not operate stand
What if opt. cost is $10 per hour? – YES

Insight:
The higher the Opportunity cost -> less likely to take action
Example:
Plan to attend university rather then work

Obtain high-paying job -> Opportunity cost is high
Result: may choose not to attend university
Summer jobs. High school graduates
20 000 per year
40000 per year
Equally good students
If summer jobs made permanent who is more likely to enter university in September ?
Answer : A student
December 1990
Ontario universities predict first year enrolment: 25 000
Spring 1991

Economy enters deep recession. Employment drops. Unemployment rises.
September 1991
Is actual enrolment likely to be more then 25k or less then 25k?
Answer : more

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Opportunity cost does not depend on the value to you of action taken.
(Value to you is relevant when you are choosing among alternative actions)

Eg1
Action taken: dinner at restaurant at $100
Next best alternative: work 2 hours and earn $50

1. Opp cost 100+50 = 150
2. Does oppt cost change if
   Value to ypu of dinner is $250 ? NO
   $500 ? No
   $ 75 ? (Would not go to restaurant)

Rational Decision Making

Undertaken activity if the marginal (additional) benefit exceeds marginal (additional) cost.

Insights

1. Include all opportunity costs
2. Ignore sunk costs

Sunk Cost –("Fixed" Costs)
Defenition
Costs which are incurred whether or not action is taken

Insight
Only relevant costs are those which can be avoided if action is not taken

Restaurant : Should it Stay open for Lunch ??
Lease Payment: 12 000 per month -> $400 per day
Dinner: 150 meals
Lunch: 25 meals

Additional (Marginal) Revenue
25 meals @ $20 = $500

Additional(Marginal) Costs
Chef : 3h @ $30 = $90
Waiters (2) 6h @ 10 = $60
Food: 25 meals @ 5 = 125
275
Conclusion:
1. 500-275 = 225 – profitable to stay open
2. fixed (sunk) cost of lease is not relevant

Eg
1. Marginal benefit of attending sports event:
$100 (both jack and Jill)
3. Ticket price: $50
    1. Jackck buys one week in advance
    2. Jill plans to buy on day of even

3 Subway breaks down on day of event and jack and Jill face unexpected cost : 75 for taxis

Should Jack attend event?
Should Jill attend event ?

Answer :
Jack should attend:
MB (Marginal benefit) = 100
MC(Marginal cost) = 75
MB>MC
[ticket price is a sunk cost, therefore its ignored]

Jill should not attend:
MB = 100, MC = 75 + 50 = 125

MB<MC

Thinking like an economist

You buy a concert ticket in advance and pay reduced price of $50. Unfortunately, when you arrive at the concert, you discover that you lost the ticket. As planned, you take a taxi to the concert and the taxi cost $20. The cost of the concert ticket at the door is $65. If u have the funds, should you buy a new ticket?

Answer : Buy new ticket.
Marginal Benefit: $70 (at least)
Marginal Cost: $ 65

Note: marginal benefit is at least $70 (since you were willing to pay at least $50 for the original ticket price + taxi 20)

1. Are taxi(20) and the ticket(50) sunk cost?

YES
2. But we ignore sunk cost ?
YES

Insight
(1) Taxi and ticket provided information as to marginal benefit
(2) Marginal cost is $65 (doest not depend on cost of taxi or reduced ticket price)

Incentive
Alters marginal benefit or marginal cost of an action (and can thus affect whether an action taken)

Eg.
Unintended consequences of Public Policy

1. TO help low-paid workers, province raises the min. wage to $10/h

Response: employers choose to hire fewer workers thus reduce the opportunity of unskilled workers to gain experience

2. To protect workers, province requires firms to make large severance payments if plant is shut down.

Response: firms can choose where to locate plants, and fewer plants may be opened (thus reducing job opportunities)

3. Province requires use of seatbelts, to reduce injuries

Response: 1. Before legislation, drivers choose degree of "care" by weighing marginal benefits and marginal cost
Marginal benefits - reduce accidents and injuries
Marginal cost – drive slower, pay more attention
2. With legislation, marginal benefit of "care" declines (less likely to be injured, if accident)
3. Drivers choose to exercise less "care"

Evidence (after mandatory seatbelts)
Number of serious injuries falls
Number of accidents rises

Tutorials
Thursday 1 - 2, 12 – 1
Wednesday 4 - 5

Wednesday, September 15, 2009

Comparative Advantage and the Gains

1. Key Concept: Comparative Advantage

2. Production Possibilities Frontier
Constant Oppt Cost

Increasiing opt cost

Specialization

Individuals: Produce (one) of few goods
Purchase many goods
Counties: Export goods
Import goods

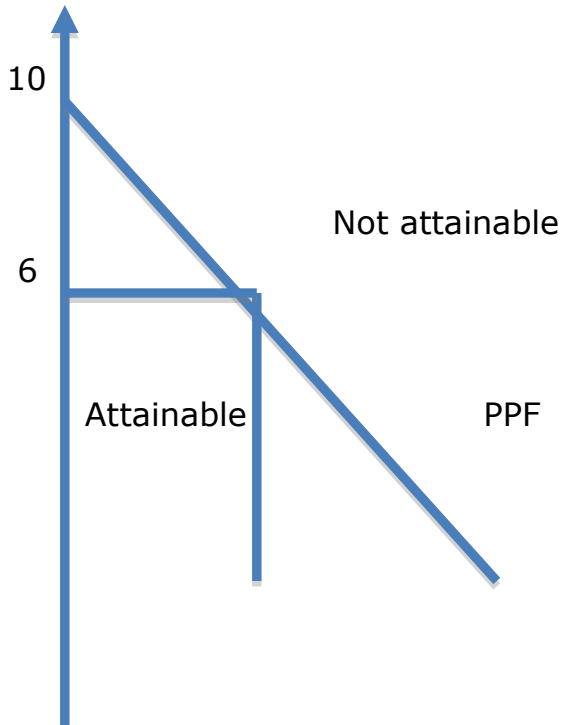
Trade/Exchange

Source of gains from trade/exchange:
Comparative advantage

PPF(production possibilities frontier)
(Constant Opportunity Cost)

Gumdrops	**Chocolates**
10	0
8	1
6	2
4	3
2	4
0	5

Create the graph



Chocolate

(1) Scarcity
(2) trade-off
(3) opportunity cost

1. Switch from all Gumdrops to all Chcolate

Opportunity cost = 10 = 2 Gumdrops
of one Chocolate 5

2. Switch from all Chocolate to all Gumdrops
Opportunity cost = 5 = 0.5 Chocolates of
one Gumdrop 10

Note: Straight line (linear) PPF implies that these opportunity costs do not change along the PPF

Comparative advantage and the gains
From Trade

Key Result:
An individual (or country) has a comparative advantage in an activity if the individual (or country) can perform that activity at a lower opportunity cost that anyone else

The existence of comerativea adventage is key to
1. Specialization
2. The gains from trade

Bill Gates
Should he write program ?

1. Time to write computer program
Gates: 3 h
Consultant : 10h

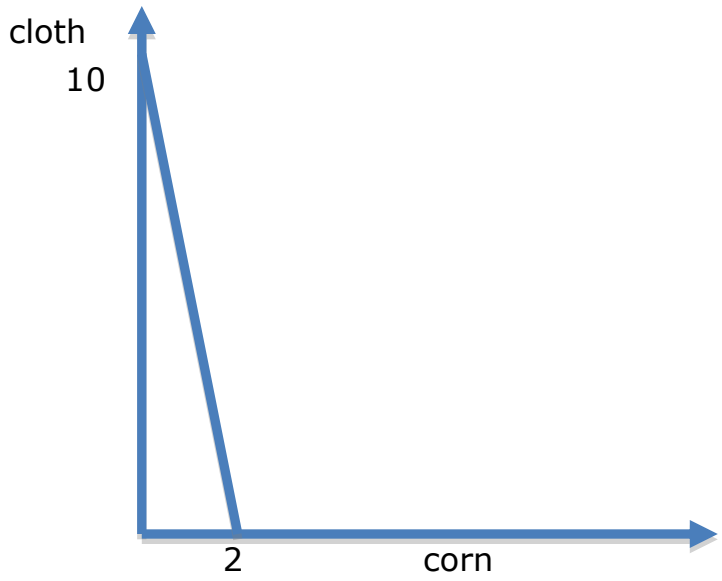
Eg. 1

Production possibilities (per week)

	Cloth	Corn		
Jonhn	1o	2	1/5 corn	5 cloth
Jane	8	4	½ corn	2 cloth

John has <u>absolute</u> advantage in production of cloth (i.e. is more efficient in a production of cloth)

Jane has an <u>absolute</u> advantage in production of corn



Opportunity Cost (Constant)

John

Opportunity cost = $\frac{2}{10}$ =0.2 corn

(1 cloth)

Opportunity cost = 10 =5 cloth
(1 corn) 2

Jane
Opportunity cost = 4=0.5corn
(1 cloth) 8

Opportunity cost = 8 = 2 cloth
(1 corn) 4

Observation: John has a comperative adventage in the production of cloth (since he can produce cloth at a lower oppt cost 0.2 corn vs 0.5 corn)

Jane has a comparative advantage is that production of corn (since she can produce corn at a lower oppt cost, 2 cloth vs 5 cloth)

Before trade. John and Jane each dicide their time equally between the production of cloth and corm

Production(b4 traid)

	Cloth	Corn
John	5	1
Jane	4	2
Total	9	3

Suppose Joh and Jane specialize in production of the good in wich each has a comperative adc (and produce only these goods), then agree to trade

Production (after trade)

	Cloth	Corn
John	10	0
Jane	0	4
Total	10(+1)	4(+1)

The total output both goods is higher and the potential gains from trade are evident

Monday, September 21, 2009

Bill Gates question

Question
1. Doest Gates have a comparative advantage
2What is the opportunity cost of time?

Next best alternative:
Gates earns $10k per hour as executive
Consultant earns $100/h

Opp cost:
Gates: 3 x 10 000 = $30 000
Consultant: 10 x 100 = $1 000

Results:
1. Bill gates have absolute advantage
2. Consultant has comparative advantage
3. Consultant should write the program

Eg.2 Production Possibilities(per week)

	Cloth	**Corn**
John	**1o**	**2**
Jane	**16**	**8**

Opportunity Cost of Producing One Unit of

	Cloth	**Corn**
John	0.2 corn	5 cloth
Jane	0.5 corn	2 cloth

Jane now has an absolute advantage in the production of both cloth and corm. Yet John has a comparative advantage in the production of cloth, while Jane has in production of corn.

Before trade, John and Jane divide their time equally between the production of cloth and corn

Production (Before trade)

	Cloth	**Corn**
John	5	1
Jane	8	4
Total	13	5

After trade, John specialize completely in the production of cloth, while Jane now allocates 75% of her time to the production on corn.

Prod (After trade)

	Cloth	Corn
John	10	0
Jane	4	6
Total	14(+1)	6 (+1)

Perspective

Jane has an absolute advantage in production of cloth and corn

Yet Comparative advantage is key to gains from trade

The PPF and Gains from trade

1. Suppose John and Jane agree to trade 3 cloth for 1 corn

2. John and Jane can both consume combinations of cloth and corn outside their PPF

if John produces 10 cloth, he can trade it for 3.33 units of corn, therefore his corn consumption of corn will be 3.3, not 2 anymore

Example:
John produces 10 cloth
Trade 5 cloth for 1.67 corn

Consumption:
5 cloth (as before)
1.67 corn (not 1 corn)

If trade ratio were 5 cloth for 1 corn, would john benefit from trade?

NO

If John produces 10 cloth and trade fro corn, he could consume 2 corm.
Yet John, without trade, could produce (and thus consume) 2 corn

Consumption opportunities unchanged

Student Exercise:

Trade line (cloth per corn) must lie between opportunity costs of John and Jane if both are to benefit from trade.

In this example:

$2 < \text{Trade Line} < 5$

2 Individuals
Gains form trade not controversial

- Note that neither Jane nor John experiences a temporary period of unemployment

2 countries(Canada and US)

Jobs will be lost (no comparative advantage) and jobs will be gained (comparative adv)

Eg.

United States Septemer 2009

Example: Sharp increase intires imported from China

1. Reaction
Consumers benefit from lower price

Steel Workers Union lobbies government to restrict imports

Successful: temporary tariff pf 35% imposed

2.Economics : Free trade

China has comperative advantage in prod of tires; US does not

Rite prod will fall (jobs lost – workers will, After transition, Find other jobs)
US consumers benefit from lower prices

Wednesday September 23, 2009

Demand, Supply and Market prices

Competitive market - Many buyers and sellers, each of whom has no influence on price.

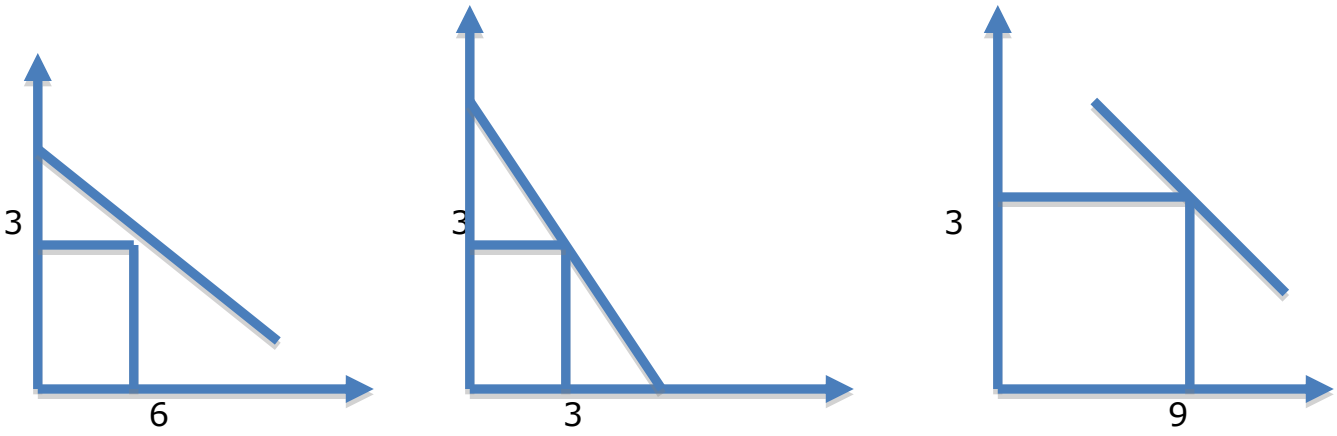
Example : coffee

Law of Downward Slopping Demand

Other things equal, the higher is the price of a good, the lower is a wauntity demanded

Price	Quantity demanded
5	0
4	3
3	6
2	9

Market demand curve



Jane John market (jane + john)

The market demand curve: sum of individual demand curves (at each possible price, sum the quantities demanded by each individual)

1. A change in quantity demanded (as the price of the good changes) is a movement along the demand curve
2. A change in demand (for a given price) is a shift in the demand curve

3. Sources of shifts in demand curves

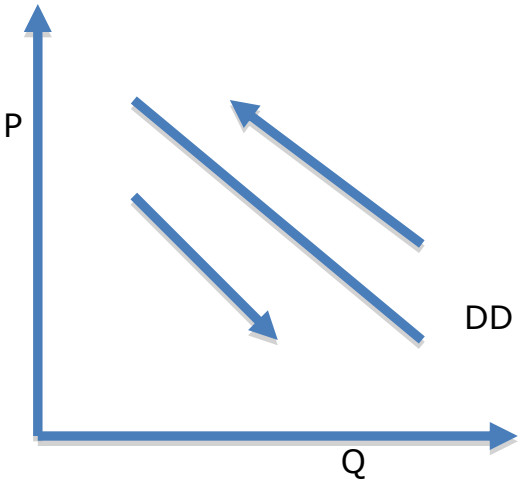
Price of related goods

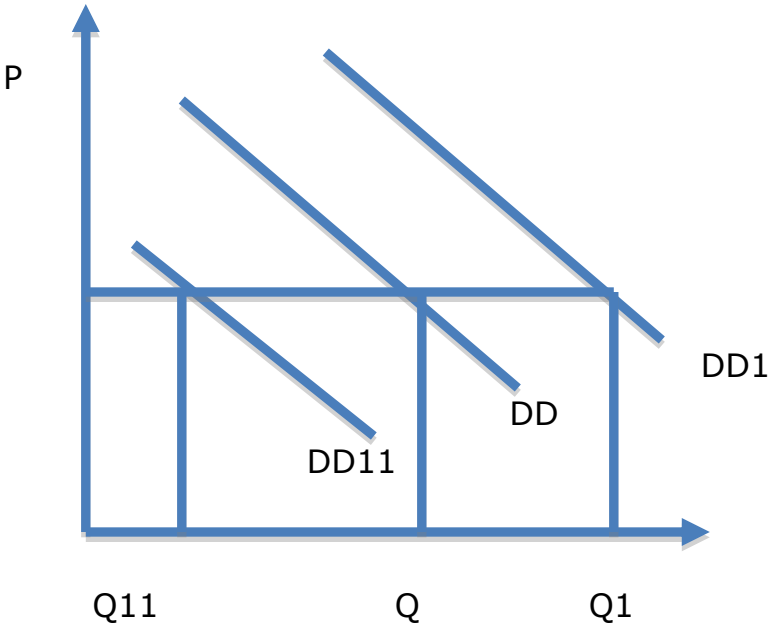
Substitutes

compliments

income
Preferences

Change in quantity demanded -> movement along DD

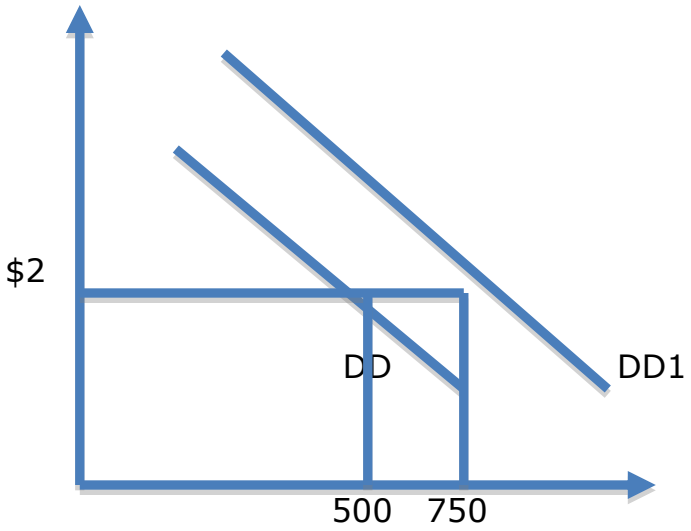




Change in demand <-> shift in DD (at a given price), QD changes

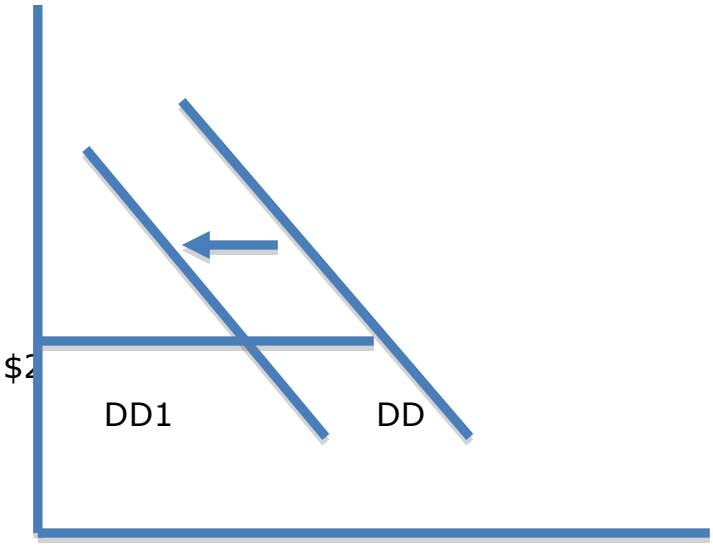
<u>Shifts in demand Curve for Ice Cream</u>

#1 Usually hot summer



DD original demand curve
DD1 demand curve after shift

#2 sharp drop in price of yogurts cones (substitutes)



Supply Curve

1. Law of Upward-Sloping Supply

Other things equal, the higher is the price of a good the higher is the quantity supplied

Source: firms seeking to max profit

2. Market Supply Curve: Sum of Firm Supply
Curves (Assume there is a large number of firms, each of which can exert no influence on price)

In the market we simply add all the quantity supplied (ref to the demand market with Jane and john)

Change in Quantity Supplied
It means a movement along supply curve.

Change in supply:
<-> Shift in Supply Curve (for given price, supply changes)

A change in quantity supplied (as the price of the good changes) is a movement along the supply curve

A change in supply (for a given price) is a shift in the supply curve

Sources:
cost of production
Prices of factors of prod
Technology

Eg.1 Severe Drought in Brazil (Supplyurve shifts to the left)
Eg 2. Technological innovation which reduces cost of harvesting coffee beans (supply curve shifts to the right)

Equilibrium in a Competitive market

1. Equilibrium price occurs where QD = QS

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Equilibrium price occurs where quantity demanded equal to quantity supplied.

Shifts in either the demand curve or the supply curve (a change in either suppluy or demand) or both, will alter the equilibrium price.

Market Equilibrium

Price	Quantity demanded	Quantity supplied
5	2	6
4	3	5
3	4	4
2	6	3
1	9	0

Equilibrium Price
P =3 Qd=Qs=4

Any Other Price: market forces will change

1) P =4 Qd=3, Qs=5
Qd<Qs -> surplus -> price falls

2) P=2 Qd=6, Qs=3
Qd>Qs -> shortage -> price rises

[Diagram when market is at Equilibrium, including shortage and surplus demonstrations]

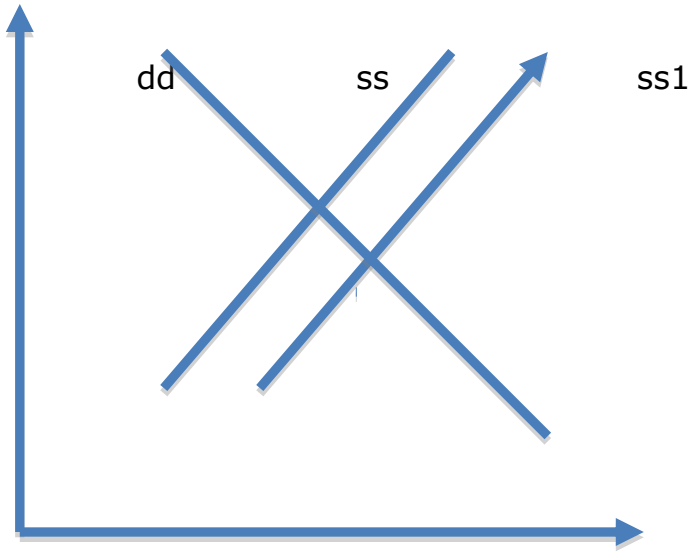
To Determine How an Event will affect a market.

1. Decide whether event affects supply or demand (look for shifts)
2. Decide direction of shift
3. Use supply and demand schedule to identify change in equilibrium

Example:

If there is a boom coffee crop in Brazil, what happens to the price of tea?
Answer: Goes down

What happens to the price of textbooks?
No change



Price of coffee falls -> demand for tea (substitute good) falls

Price of tea falls.

Substitutes -> "instead off"
Example: tea and coffee

Compliments -> "together"
Example: coffee and cream

If there is an oil disruption in the Middle East, what hap to the price of used Cadilacs?

Background
- Used cadillacs are not fuel efficient cars
- Oil is used to produce gasoline
- Gasoline and cars are compliments

Oil graph
Supply curve will shift to the left, therefore price will go up

Cadillac graph:

1. If there is no supply effect : demand curve will shift to the left, causing the price to go down)

2. IF there is a supply effect: People will say that they cant afford to drive this car anymore, because of the gas expenses, therefore bringing more cars to the market, and supply will also shift, BUT to the fight. Price will fall by even more.

Example:
To reduce dependence on foreign oil, the US takes steps to increase the demand for corn based ethanol, an alternative to gasoline

What happens to:
1. price of corn?
Answer: Goes up

2. price of soybeans (and similar products)?
Answer: goes up

3. the price of beef ?
Answer: Goes up

Question 1:
Demand curve will shift to the right -> price goes up

Question2:

Farmers will grow more corn, they have to decrease production of other agricultural goods. This will shift the supply curve to the left - > price will go up

Question 3:
One of the important cost of growing cow -> the cost of feeding cows. If cost of feed increases -> supply shifts to the left -> price goes up.

United States
25% of corn production goes to ethanol
In 2010, ethanol content of gasoline will have to be raised to 12%

Science Question:

Does ethanol lower greenhouse gas emission?

Economic Question: (resolved)
Does promoting corn-based ethanol as alternative to gasoline raises world food prices?

More questions:

An increase in price of ground beef will:
A) increases the demand for chicken, a substitute for beef
D) decrease the quantity demanded of ground beef

Wednesday, September 30, 2009

Pop quiz:

Total Revenue = Price * quantity

1. Toronto Transit Commission (TTC)
2. One of 5 toll bridges which cross a river, each of which sets the toll at $5

To Increase Total Revenue:

Should TTC increase its fare?
Should the toll bridge owner increase toll (price) ?

1. TTC: price goes up (fare) -> TR goes up!!! Because
DD is inelastic (few close substitutes)

2. Owner of the bridge:
Price (toll) will go up -> TR will go down!! Because :
DD is elastic (several close substitutes)

Fare Increase :

1. for those who continue to ride the TTC, fare will be higher

but

there will be fewer riders
Result: Law of downward-sloping demand curve is not sufficient to answer question

Price Elasticity of demand:

Definition: Percent change in quantity demanded / percent change in price

%delta Qd / %delta P (ignore minus sign)

Measures responsiveness of quantity demanded to a change in price

Mid-point Convention:

%deltaQ = deltaQ/Q_ (Q_ avg quantity)

%deltaP = deltaP/P_ (P_ average price)

Situation	Price	Quantity Demanded
A	0.9	1 100
B	1.1	900

%delta Qd = 200 / ((1100+900)/2) +100 = 20%

%edeltaP = 0.2/ ((0.9+1.10/2) +100 =20%

Elasticity = 20%/20% = 1

Insight: same result if go up demand curve from A to B or down demand curve from B to A

Terminology

Perfectly inelastic: elasticity = 0

Inelastic: 0 < elasticity < 1

Unit elastic : elasticity =1

Elastic : 1<elasticity < infinity

Perfectly elastic : elasticity = infinity

Eg.1

% delta P = 10
%delta Qd = 20

elasticity = 20/10 =2 quantity demanded is very responsive to a change in price

Eg2

% delta P = 10
%delta Qd = 2

elasticity = 2/10 =0.2 quantity demanded is not very responcive to a change in price

Why do Elasticities Differ : Available of Substitutes ?

More/ better substitutes -> higher will be the elasticity

Margarine is close substitute for butter
-> butter has high price elasticity

Tobacco has few close substitutes
-> cigarettes have low price elasticity

1. Longer time elapsed since price change
-> higher elasticity (closer substitutes as time passes)

Example: if gas price raises, people drive less; as time passes, people buy more fuel efficient cars

Implication: higher elasticity in long – run than short – run

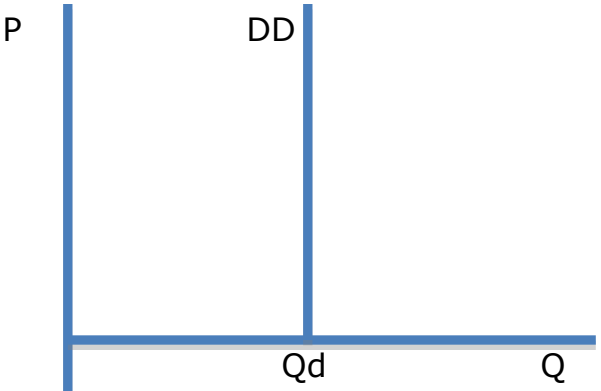
2. Definition of market
Narrow (one brand of toothpaste) - > higher elasticity (many substitutes)

Broad (all toothpaste) -> Lower elasticity (few substitutes)

Elasticity of Demand : Special Cases

Perfectly Inelastic
Consumer

Consumer Demand Qd
Regardless of price



Perfectly Elastic

Perfect Elastic Demand Curve

<u>Purple</u> Tennis Balls

Assumption: tennis balls, in all colors, available at $ 5 each Players are indifferent to color of tennis ball

Elasticity varies along a linear Demand Curve

P	Q	Qd = 20 - 0.4P
50	0	

40	4
25	10
10	16
0	20

1. If price declines from 50 to 40 :

elasticity: ((4-0)/2)/ ((40-50)/45) = 9 (elastic)

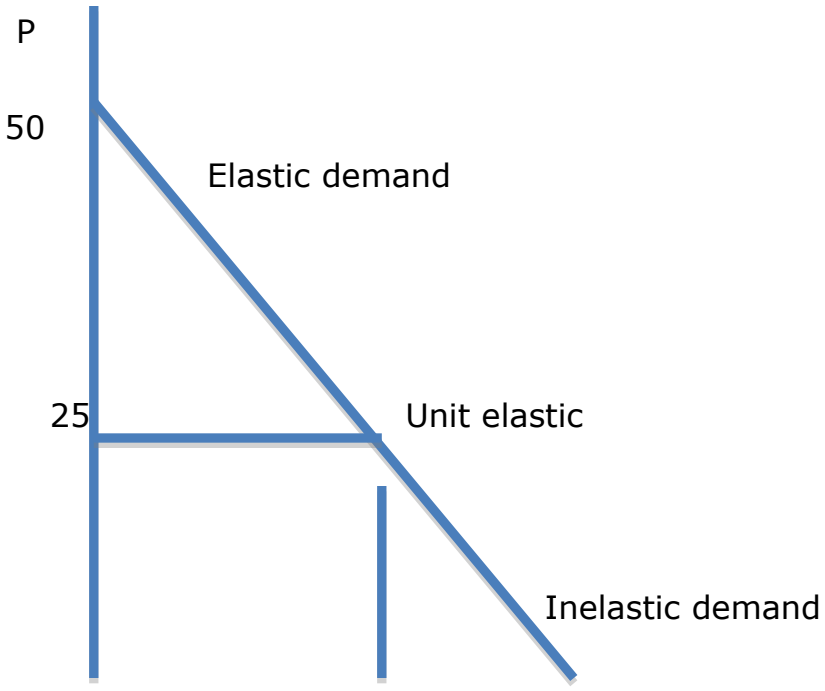
2. If price declines form 10 to 0

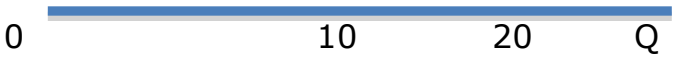
elasticity = (20-16) /18 / (0-10)/5 = 0.11 (inelastic)

Intuition : When price is high, quantity demanded is low ->
%delta Qd is high
%delta price is low

Result : DD starts out with high elasticity of demand (elastic)

When price low, Qd will be very high ->
%delta Qd is low
%delta price is high





Monday, October 05, 2009

Elasticity of Demand

Slope = delta P/ delta Q

Elasticity = deltaQ \q \ deltaP\P = P\Q + 1\ (slope)

Moving along the downward demand curve, elasticity changes.

Price Elasticity of Demand and Total Revenue.

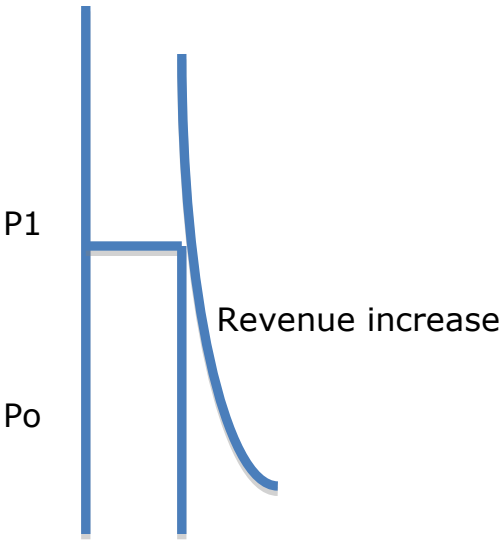
Total revenue = Price * Quantity

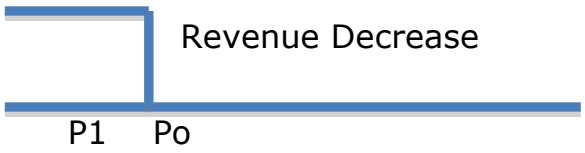
In response to an increase in price, total revenue:
- increases if demand is inelastic

- is unchanged if demand is unit elastic.

- decreases, if demand is elastic.

Inelastic Demand Curve (TR goes up, Price goes up)





TRo = Po*Qo (Tatal revenue at old price)

TR1 = P1*Q1 (revenue at higher price)

Revenue increases : (P1-Po) * Q1
Revenue decreases: Po *(Qo-Q1)

Thus, in this case, revenue increase exceeds revenue decrease, so total revenue rises as price increases.

Intuition
Revenue increases because customers who continue to pay higher price (P1-Po) * Q1

Revenue decreases because some customers will not pay a higher price. Po *(Qo-Q1)

Income Elasticity of Demand:

Percent change in quantity demanded / percent change in income

Normal good: income elasticity > 0

Inferior goods: income elasticity < 0

Insights :

Most goods are normal goods
Few goods are inferior goods
Example: bus travel

Increase in Income:

Normal Good: DD shifts to right ("an increase in demand")

P up
Q up standard graph

Inferior Good: DD shifts to left (a "decrease in demand")

P down
Q down Because if a bus traveler gets and increase in income, he would try to avoid to travel by bus.

Price Elasticity of Supply

percent change in quantity supply / percent change in price

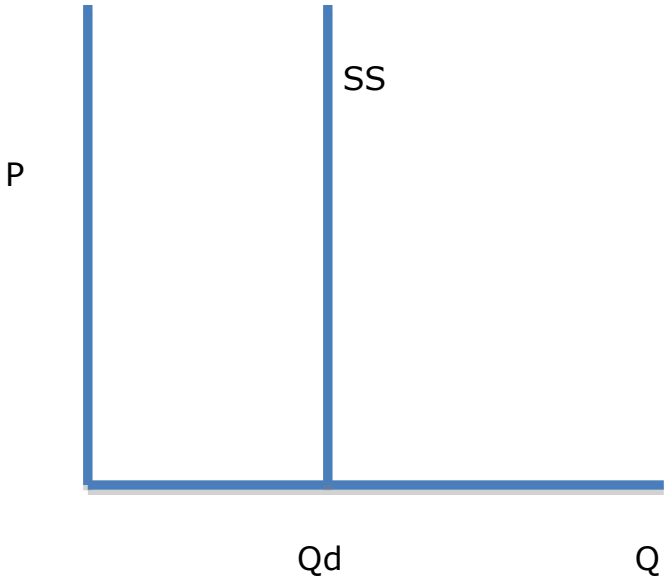
1. **terminology**

perfectly inelastic: elasticity = 0
inelastic: 0 < elasticity < 1
elastic : 1 < elasticity < infinity
perfectly elastic: elasticity = infinity

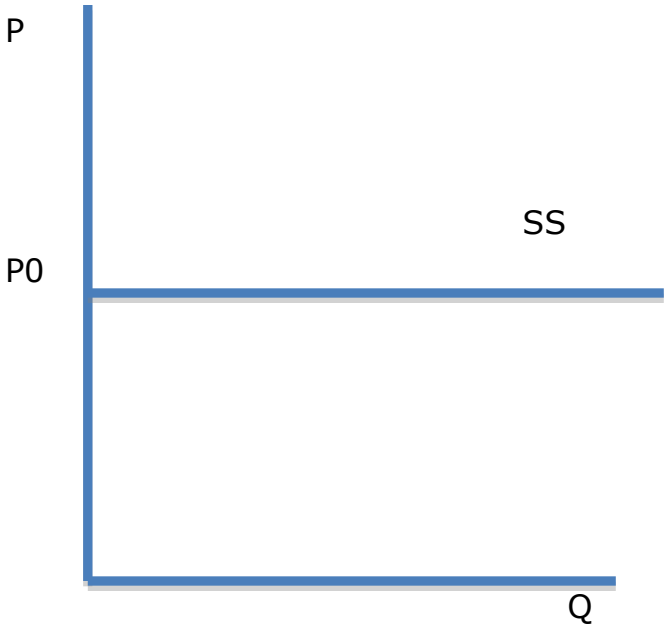
2. Difference in elasticity reflect
- time elapsed since price change *
- factor substitution possibilities

Perfectly Inelastic Curve:

Firms supply Qd, regardless of price



Perfectly Elastic:
Firms supply unlimited quantity at Po (and zero if price is beneath P0)

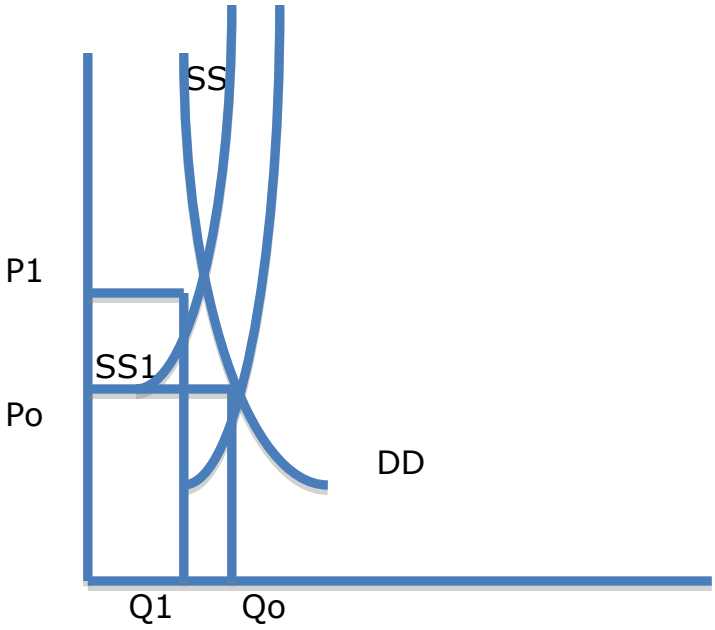


Examples:

Perfectly inelastic SS: Quantity of cell phone frequencies

Perfectly Elastic SS: Any good for which firms can produce unlimited quantity at unchanged cost

Question:
If police succeed in reducing the flow of heroin into Vancouver, will the amount of heroin - related crime decline?



Demand is inelastic (few substitutes) ->

1. Reduction in quantity demanded is small relative to the increase in price
2. total expenditure * on heroin increases
(P1 * Q1 > Po*Qo)
3. heroin – related crime increases (since expenditures on heroin will increase)

Wednesday, October 07, 2009

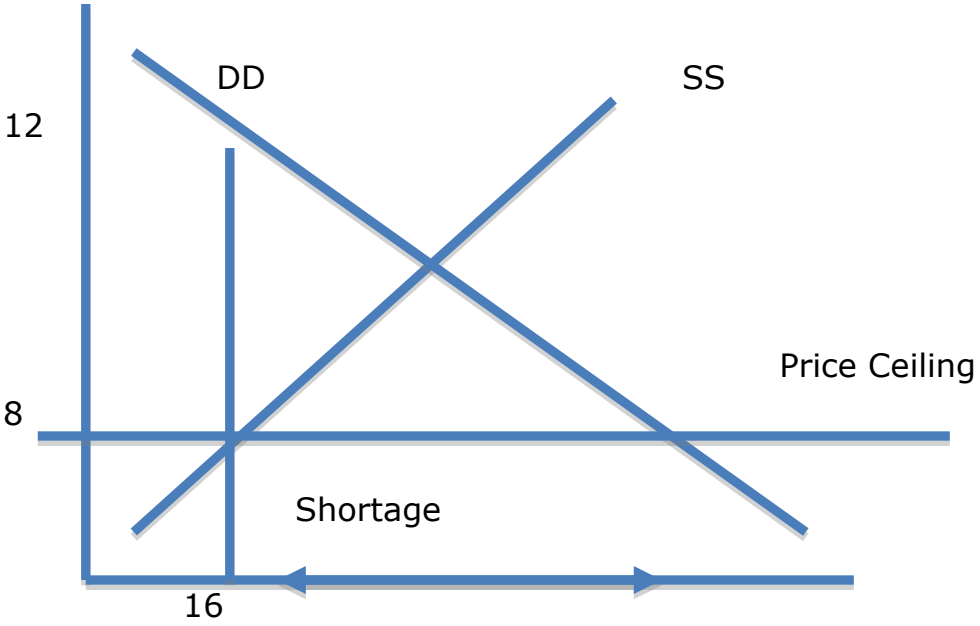
1. Price Ceiling
1.1. General Analysis
1.2. Example: Rent Control

2. Price Floor
2.1. Genereal Analysis
2.2. Example:

Price Ceilings and Price Floors

1. Government intervention in competitive markets is not helpful
2. Unintended consequences.

The Impact of Price ceiling

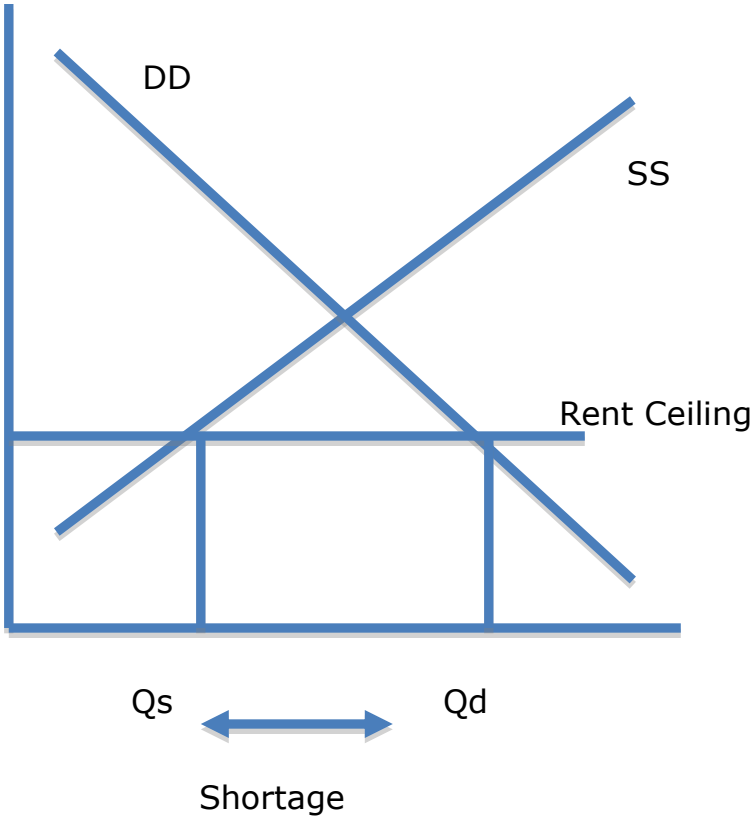


1. Price ceiling, if beneath the market clearing price creates shortage
2. Principle of voluntary exchange

Q(P) = minimum

3. Non price rationing
4. Those able to buy at the price ceiling could resell to other buyers at the "Black Market" price of $12

Rent Ceiling



Economic Concepts with Rent control

1. Shortage

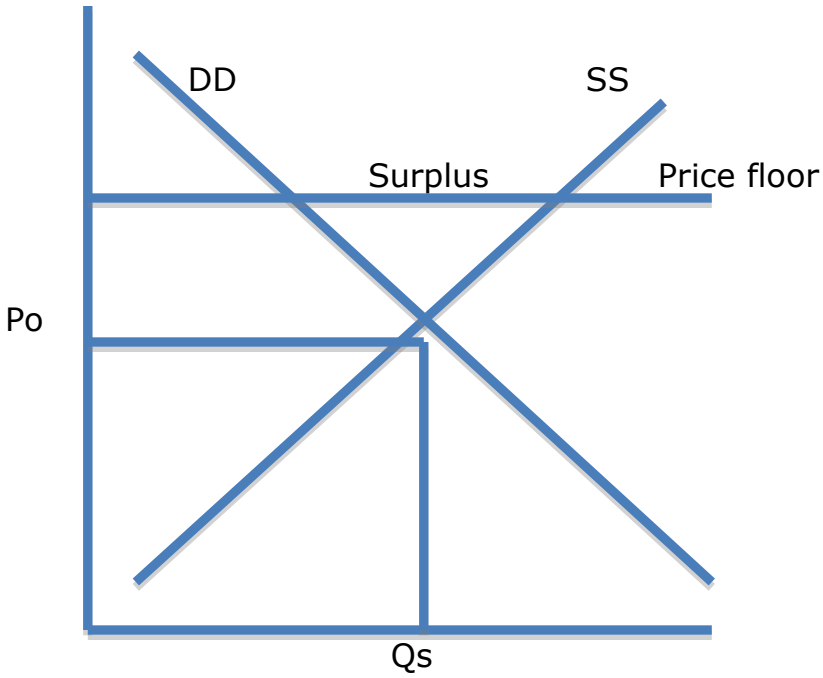
2. Incentive Effects
- discourages construction (shortage worsens in long run)
- discourages maintenance

3. Non-price rationing
-inefficient (search time, opportunity cost)
-landlords "choose" tenants

3. Not targeted to poor (single parent or doctor as preferred tenant ?)

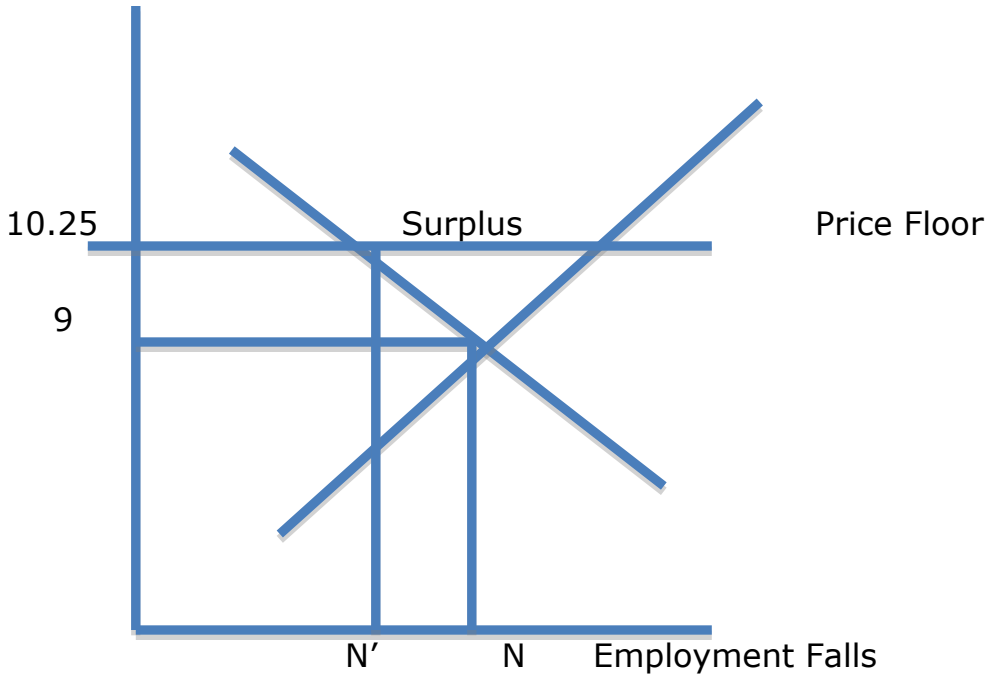
Rent control is a bad idea ?! Economists can say.

Price Floor



Why would government do it ?

Minimum Wage Rate



DD: demand by firms for unskilled workers

SS: supply of unskilled workers

Economists are not supporting minimum wage legislations

1. Labour surplus (unemployment)
2. Teenagers: Most affected
3. Reduces opportunity for on-the-job training

Eg.
IF government requires seller to pay $10 sales tax on each item sold:

1. Does seller receive a lower price ?
No

2. Does buyer pay a higher price ?
Yes

Does the answer depend on SS and DD schedules ?

The Incidence of a Sales Tax

1. Refers to ultimate burden of tax.
Measured by higher price paid by the buyers and lower price received by sellers.

2. Key result:
- Does not depend on whether tax is levied on buyers or sellers
- Does depend upon the elasticity of demand and supply

NO TAX
Price paid by buyers = price received by seller = market price

Tax levied on seller

Price paid by buyer – market price

Price received by seller = market - tax

Eg.

No tax			Sellers Pay $10 Tax
P	Qd	Qs	
120	1	9	7
115	2	8	6
110	3	7	5
105	4	6	**4**
100	**5**	**5**	3
95	6	5	2
90	7	3	1
85	8	2	
80	9	1	

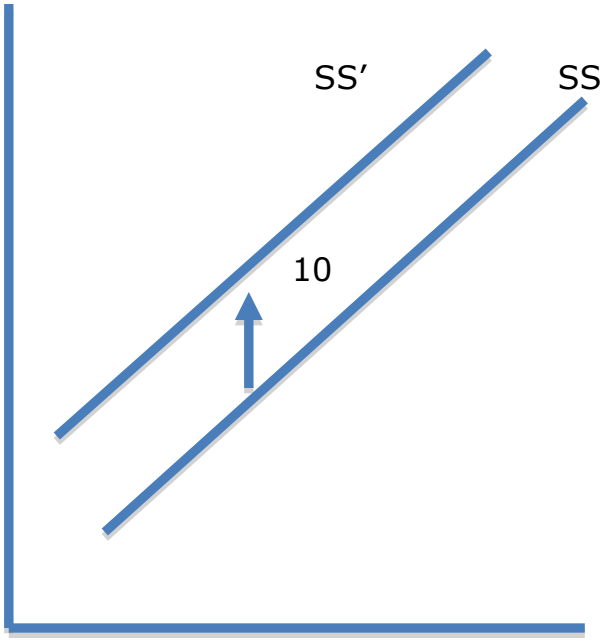
P=100 *Demand is unchanged (when tax is levied), while supply changes*
Q = 5

Price paid by buyer:
100

Price received by seller:
100

Once we know new supply schedule, we can find the new equilibrium price. P =105, Q =4.

10 Tax levied on sellers



SS shifts upward by 10
For sellers to supply a given quantity price must rise by 10

Eample Qs = 5
Po=100
Price 110, sellers will supply 5 units only if price rise by 10.

Price paid by buyer : 105
Price received by seller: 105 =100 = 95

Wednesday, October 14, 2009

<u>The Incidence of a Sale tax</u>

Refers to ultimate burden of a tax
Measures by higher price paid by buyer and lower price received by seller.

Tax levied on seller:
DD does not shift (buyer pays market price)

SS shifts upward (seller receives market price minus tax)

Tax levied on seller: seller sends tax to government
Tax levied on buyer: buyer sends tax

Observation: sales tax is usually levied on seller.
Incidence of tax does not depend upon whether tax is levied on buyer or seller

According to the numeric example: When there is no tax, we don't have to worry about price received by the buyer or seller.

Insight:
In the standard case, where DD slopes downward and SS slopes upward, the burden of the sales tax falls on both buyer and seller.

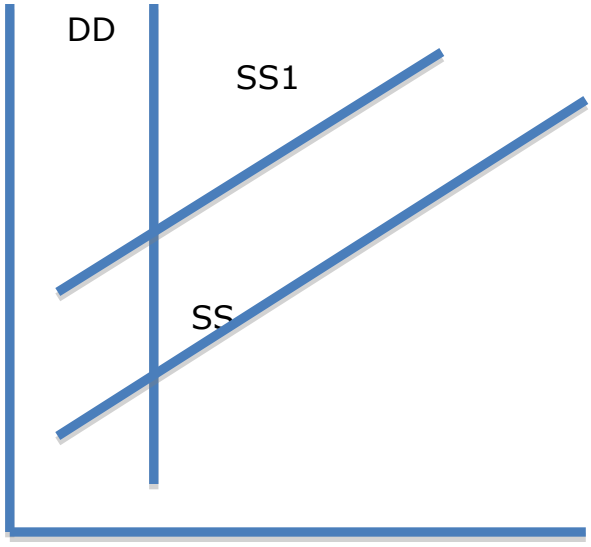
Tax Incidence and Elasticities of Demand and Supply

Consider :
(1) extreme cases
(2) tax levied on seller (since incidence is the same when levied on buyer)

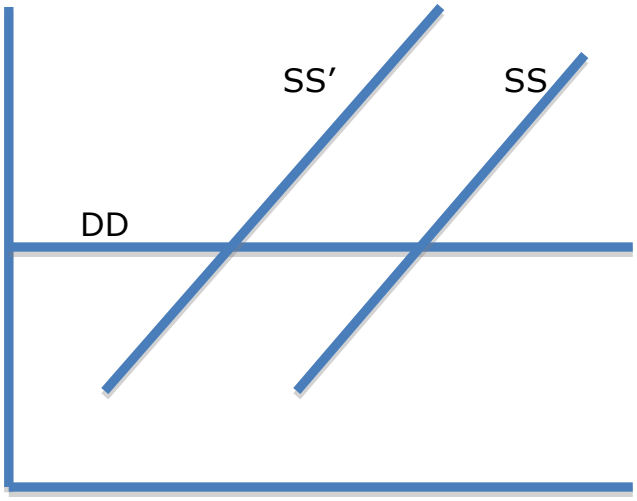
First case: $10 Tax to be paid by seller
Perfectly Inelastic Demand

In the diagram below, SS shifts upward and therefore, the buyer will pay the fill amount of the tax. P1 = Po+10

Seller will receive price paid by the buyer – tax, which is the market prce exactly

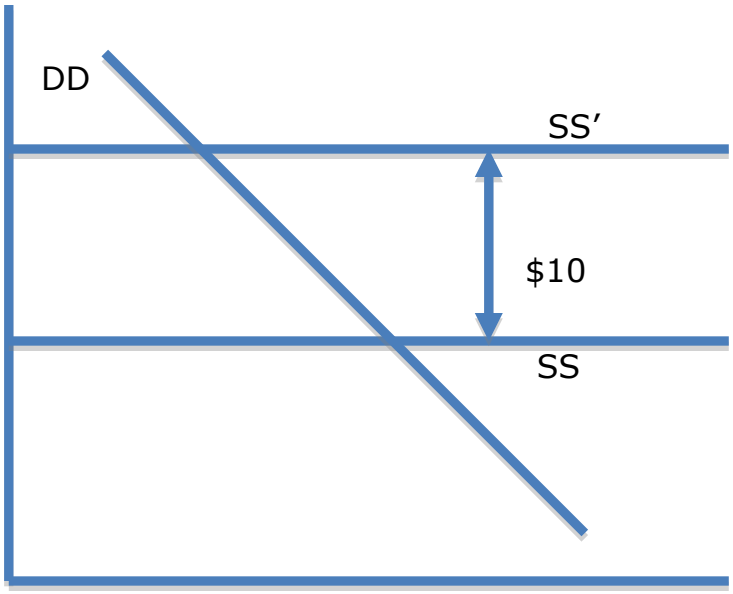


Second Extreme Case:
If the demand of the product will be perfectly Elastic



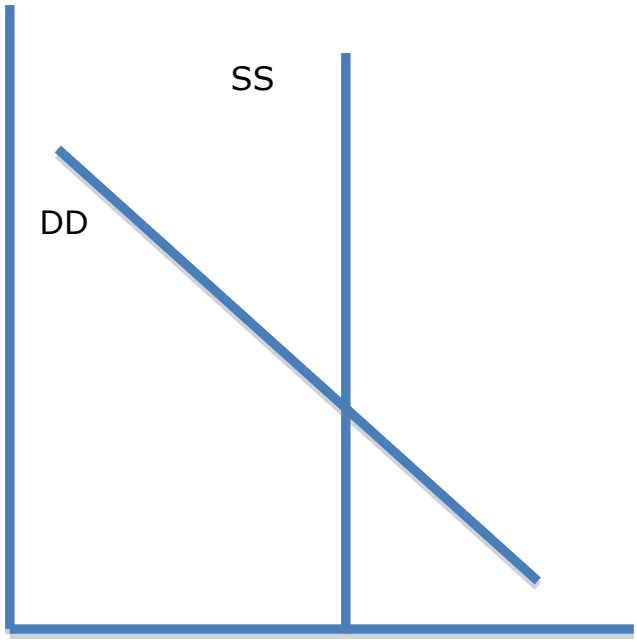
The seller of the product is not forced to may $10 more. Therefore Qs will go down. However price paid by the buyer pays none of the tax, what so ever. However, the government pays $10 more.

Perfect Elastic Supply



P1 = Po +10
Buyer pays: P1=Po+10
Seller receives: P1-10 = Po

Perfectly Inelastic Supply



How to show?
Insight: same result if tax imposed on buyer

We have to treat the case as the result is levied on the buyer, I get the same result.
Answer: Seller will pay tax.

The Canada Pension Plan:

Background: Large Increase in Payroll Tax , from:
5.85% to 9.90% Legislation in 1997
payroll tax – sales tax on labor.

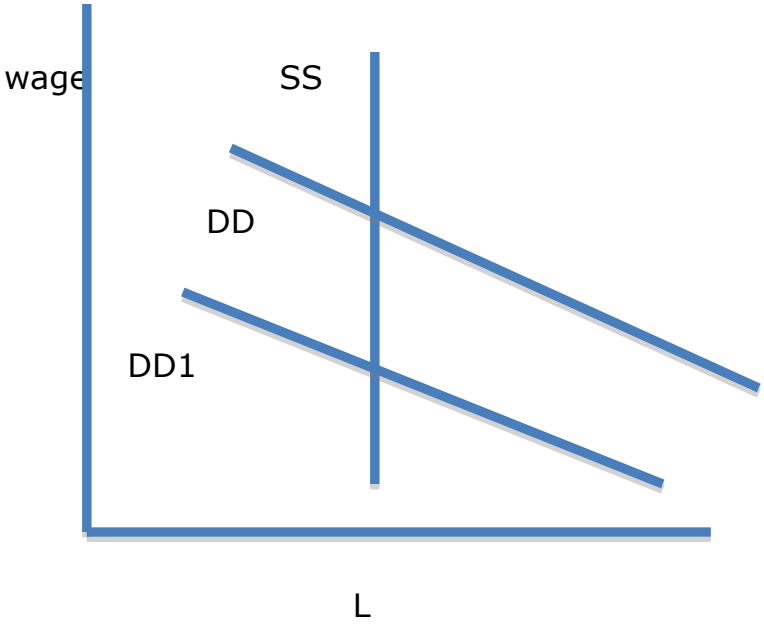
Question: 1. Doest it matter whether the payroll tax is levied on employer or employee, or split evenly between them?
NO

\2.Who bears the ultimate burden of the tax, employer or employee ?

Answer:

1. Long run labour supply is (almost) perfectly inelastic

3. Assume that full increase in contribution(t) are paid by employers



The DD for the labor will be shifted down by the amount of the tax.
Remember: burden does not depend upon whether tax is levied on employer or employee

Employer pays: W1 + t = W0 (no change)
Worker receive: W1 = Wo – t (full incidence)

Monday, October 19, 2009

<u>Consumer demand theory</u>

1. We will be making assumptions about consumer's preferences
2. rational choice.

Principle of Diminishing Marginal Utility
Total Utility = total satisfaction to person from consumption o fproduct

Marginal Utility = additional satisfaction (change in total utility) from consumption of one more unit of product

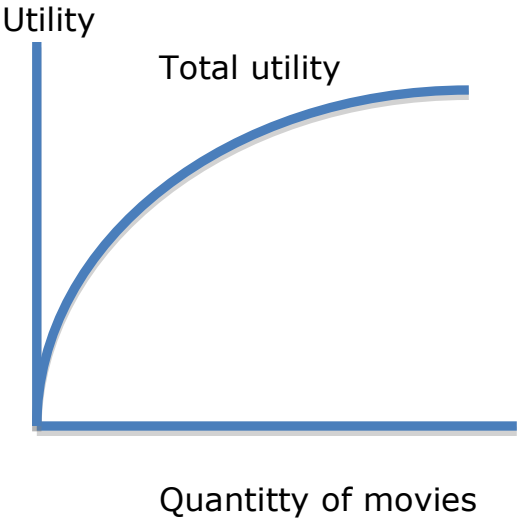
Principle of Diminishing Marginal Utility

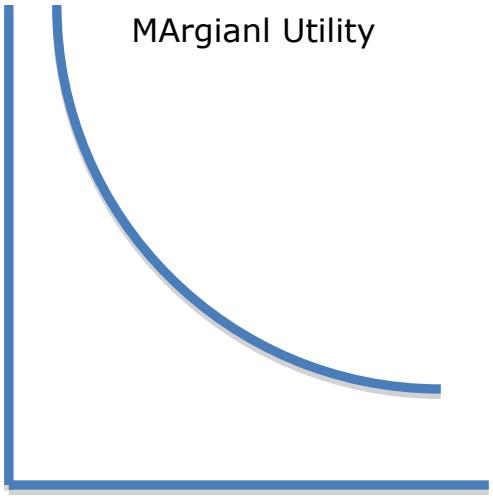
As a person consumes more of a good, the marginal utility of the good declines.

Refer to the numeric example on the website.

Observation :

1. TU increases with additional consumption
2. MU decreases with additional consumption





Consumers Seek to Maximize Total Utility

(Satisfaction), given their budget constraints

Optimizing Rule

$$\frac{MUx}{Px} = \frac{MUy}{Py}$$ for all consumed goods x and y

Numerical example: Optimal Consumption

Decisions

Consumer's Budget : $14 (per week)

Price: Apples $2
Beets $4

WE have to know: how much utility you get from each product

Apples			Beets		
Q	TU	MU	Q	TU	MU

Example is on the website

Alternative Consumption Choices

3 apples, 2 beets

MUa \ Pa = 20(40\2)

Mub\MUb = 20(80/4)

Mua = MUb ? YES

OR

Total utility 360

To maximize No change
Utility, given
Budget constrain

5 apples, 1 beet

MUa \ Pa 5(10/2)
Mub\MUb 25 (100/4)
Mua = MUb ? NO
Total utility is 310

Consume more beets (so MUb goes down)
Consumer less apples (so MUa goes up)

Implication #1 : Demand Curves Slope Downward

1. Initial Equilibrium: $\frac{MUx}{Px} = \frac{MUy}{Py} = \ldots$

2. Px increases to Px': $\frac{MUx}{Px} < \frac{MUy}{Py}$

If consumption of good x is unchanged

3. Consumer re-optimizes, by decreasing consumption of x and thus increasing the marginal utility of x until

$$\frac{MUx'}{Px'} = \frac{MUy}{Py} = \ldots$$

Where Mux' > Mux

Preferences: Diminishing marginal utility

Rational Choice: Maximize utility, subject to budget constrain

Implication: Demand curves slope downward

Optimizing Rule: Numerical Illustration

Individual is choosking at present the combination of pizza and coffee which will give him the maximum satisfaction.

MUpizza = MUcoffee
$2 $3

Wednesday, October 19, 2009

Consumer surplus

Definition : difference between the maximum a buyer would pay for a good and the price a buyer actually pays.

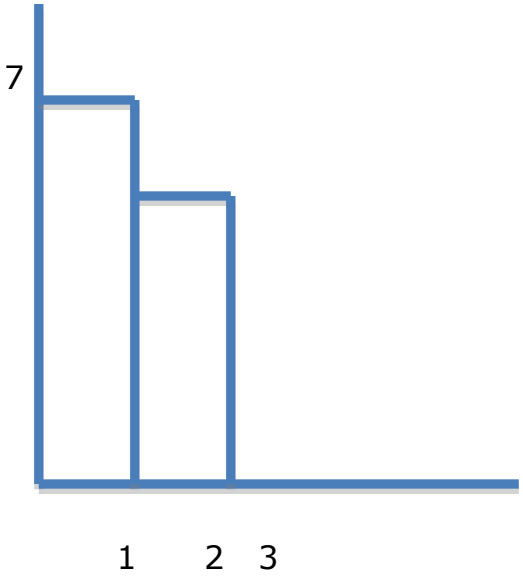
Example Marker price $3

P	Q	Consumer surplus	
7	1	4(7-3)	Consumer surplus equals area under …..
6	2	3(6-3)	
5	3	2(5-3)	
4	4	1(4-3)	
3	5	0(3-3)	
2	6	not relevant	

DD Curves: Standard Practice:
In general we will assume DD curves are down-slop except in numeric examples designed to illustrate consumer surplus.

Willigness to pay and Numerical Example of Consumer Surplus

1. In numerical example, good is not divisible -> consumer bys 1 unit, 2 units etc.
   DD is not lineal



If P>7, DD=0

If P>6 but not more then 7, DD=1

If P>5 but not more then 6, DD=2
Note: Text, Figures 7.1 and 7.2 the horizontal portion of DD is shown as a solid line.

Consumer Surplus

Measures benefit to buyer of participating in a market.

Example: market for Blue Fox Fur Coat:

Willingness to pay: $2 000

Market (world price): $500

Illegal to import into Canada.
How much would you be willing to pay for this market to exist (assuming pice would be $500)

Answer: up to $1 500

Producer Surplus:
Benefit to producers of participating in a market. It is an amount seller is paid - seller's costs

Example: House Painters

Individual A will work for $10 per hour (opportunity cost)
B 15
C 20
D 25

If market wage price is $20, then:
A,B,C will work (D will not work)

Producers surplus in market

A 20 – 10 =10
B 15-10 = 5
C 20-20 = 0

Total $15

Total surplus = consumer Surplus + producer surplus

Competitive market is a market where supply curve exists

The value to the buyer > cost to seller
It is efficient to increase output.

The value to the buyer < cost to seller
-> efficient to reduce output

Question: How much, in total. Would consumers and producers pay to prevent this market from shutting down ?

Answer: Consumer Surplus + Producer Surplus = Total surplus

Monday, October 26, 2009

Production and Cost Schedules

Production Function : relates output to quantity of inputs (capital, labour)

Short –run: One input (capital) is fixed, while one input (labour) can vary.

Long-run: All inputs (capital, labor) can vary.

Example: General Motors

Short-run: GM can vary amount of labor (overtime, lay-off)
GM cannot vary number of plants (capital)

Long-run: GM can vary number of plants and amount of labor

Product Schedules (Short - run)

(TP) Total Production total output, given labour input
(MP) Marginal Product Increase in total output divided by increase in labour input
(AP) Average product – Total output divided by labour input

Law of Diminishing Returns –the marginal product of a variable input, the presence of a fixed input, *eventually* diminishes

Numeric Example from the website. Total output.
This examples linked to the Law of diminishing return

Law of diminishing return : Intuition

Number of chefs in restaurant kitchen:

1. First chef: must make all meals, attend all ovens, no specialization
2. An additional chef: chefs can specialize, help each other

-marginal product raises

3. Additional chefs are added: eventually kitchen becomes too crowed, chefs must wait to use ovens etc. **marginal product declines.**

Variable input: labor (chefs)
Fixed input: capital (kitchen/ovens)

Insight
Law of diminishing returns

Holds only in the short run since it assumes there is a fixed input.

Measures of a firm's Cost of Production

Total Cost (TC): Total of all costs
Total Fixed Cost (TFC): total cost of fixed input
Total variable cost (TVC): total cost of variable costs

TC = TFC + TVC

Numeric Example!!!

L 0 to 1 MP =15 MC = 10/15 = 0.67
L 1 to 2 MP = 19 MC = 10/19 = 0.53
L 2 to 3 MP= 14 MC = 10/14 = 0.71

Observation:
1. Law of Diminishing Returns (short run) MP eventually falls.
2. MP goes up -> MC goes down
MP goes down -> MC goes up

Measures of Average Costs;

Average Total Cost (ATC) ATC = TC/Q

Average Variable Cost (AVC) AVC = TCV/Q

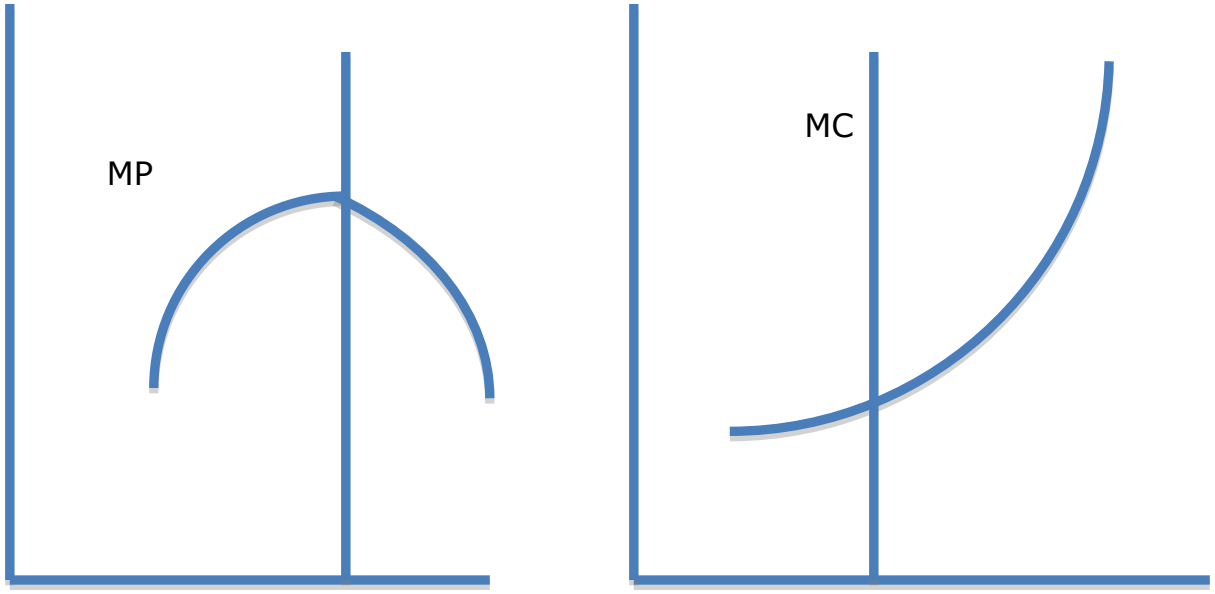
Average Fixed Cost (AFC) AFC = TFC/Q

Note: ATC = AVC + AFC

Numeric Example!!!!!

L = 2 and Q = 34
AFC = 100/34=2.94
AVC= 20/34=0.59
ATC = AFC + AVC = 2.94 + 0.59 = 3.53

MC curve eventually rises (to reflect the diminishing marginal product of the variable input).



Line goes through the max on MP and min on MC, one MP decreases MC starts to go up.

Wednesday, October 28, 2009

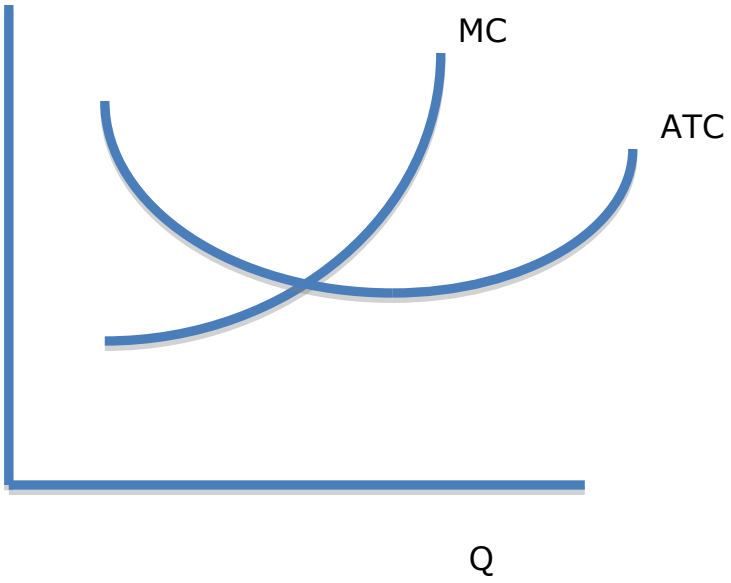
MC curve eventually rises (to reflect the diminishing marginal product of the good).

ATC curve is U-shaped (ATC = AFC + AVC) Master it!!!

AFC always declines as output increases
AVC eventually increases, due to diminishing marginal product

MC curve intersects ATC curve at its minimum point (arithmetic result, no economic explanation)

Diagram #2



Production Function

Short-run: One input (capital) is fixed, while one input(labor) can vary

Long run : All inputs (capital, labor) can vary

Firm's Long run ATC Schedule

1. In short run, GM must hire more workers to increase output (Law of diminishing Returns applies)

2 In Long run, GM can build more assembly plants as well as hire more workers.

2.1. Law of diminishing Returns does not apply.
2.2. MP does not necessarily fall after some point
-> MC does not necessarily rise

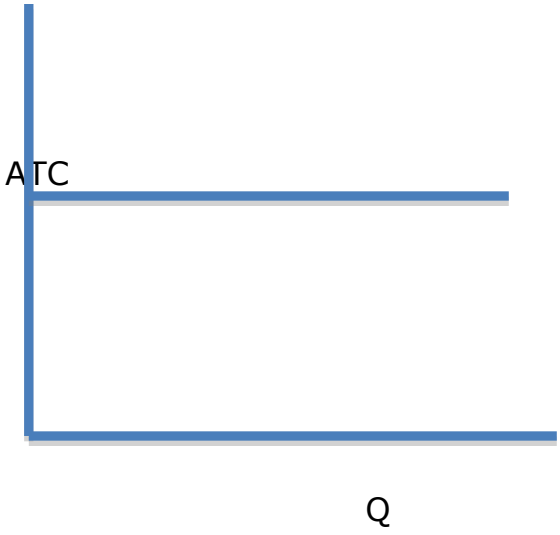
These two points demonstrate the crucial understanding between short and long run

3. Suppose firm doubles all inputs:

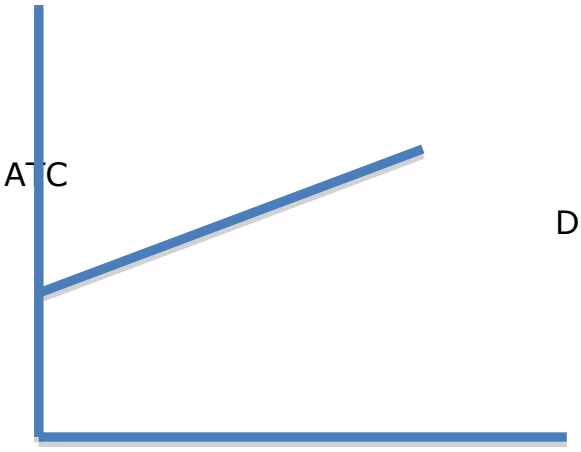
(a) output doubles (constant returns to scale) -> ATC unchanged
(b) output less then doubles (diseconomies of scale) -> ATC increases
(c) output more then double (economies of scale) -> ATC falls

In the short run is U-shaped, doesn't have to be true in the long run.

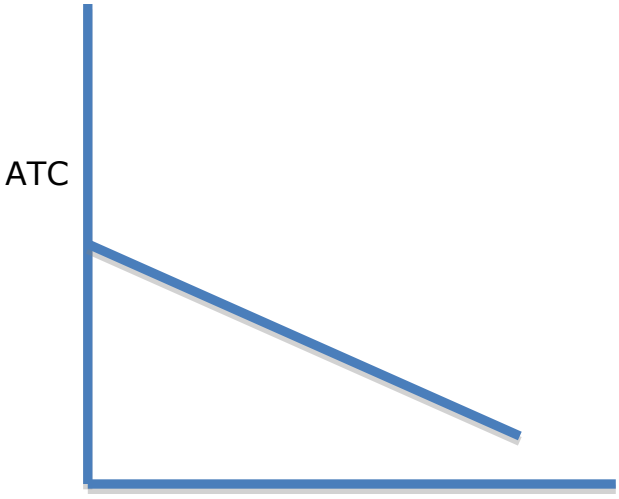
Long Run ATC curve:



Constant returns to scale



Diseconomies of scale



Economies of Scale : specialization (for example)
Diseconomies of Scale: organization and co-ordination costs

Long-Run Average Total Cost Curve

1. Labour, capital both vary -> Law of Diminishing returns does not apply
2. In the long run, there are no fixed costs
3. Shows lowest ATC for producing each level of output ('efficient production")
4. Firm's LRATC may at first exhibit economies of scale and later diseconomies of scale (see text, figure 13.7)

Economic Profit: Total Revenue *minus* Opportunity Cost

Opportunity cost

Explicit :
Wage paid to employees, cost of raw materials, etc

Implicit:
Opportunity cost of owner's invested capital (normal rate of profit),
Opportunity cost of owner's time.

Explicit cost: costs that require an outlay of money by the firm
Implicit cost: costs that do not require an outlay by the firm

Accounting profit: Total Revenue *minus* Total Explicit Costs.

Economic Profit: Total Revenue *minus* Total cost (explicit + implicit) costs

Example:

An individual buys a business for $400000 she invests $200 000 and borrows the rest (200k)

Total revenue: $100 000

Opportunity Costs:

<u>Explicit</u>

Wages	40 000
Raw materials	25 000
Bank interest (at 10%)	20 000

<u>Implicit</u>

Opportunity cost of own Funds (at 15%)	30 000

Economic Profit ($15 000)
(Loss)

Economic profit: negative -> firm should exit in long run
Accounting profit: 15 000 -> does not provide signal regarding entry/exit

Insight

Accounting profit tracks money inflows and outflows

Economic profit also requires that implicit opportunity costs be identified and estimated

Purpose of economic profit is to determine:
(1)whether firm should exit industry or stay
(2) whether other firms have an incentive to enter industry

Monday, November 02, 2009

1. In the long run, GM can vary assembly plants (capital) and number of workers (labour)
2. Suppose GM decides, in long run, to produce 100 000 cars per year

GM could have:
3 plants 15 000 at each plant
or
4 plants 18 000 at each plant

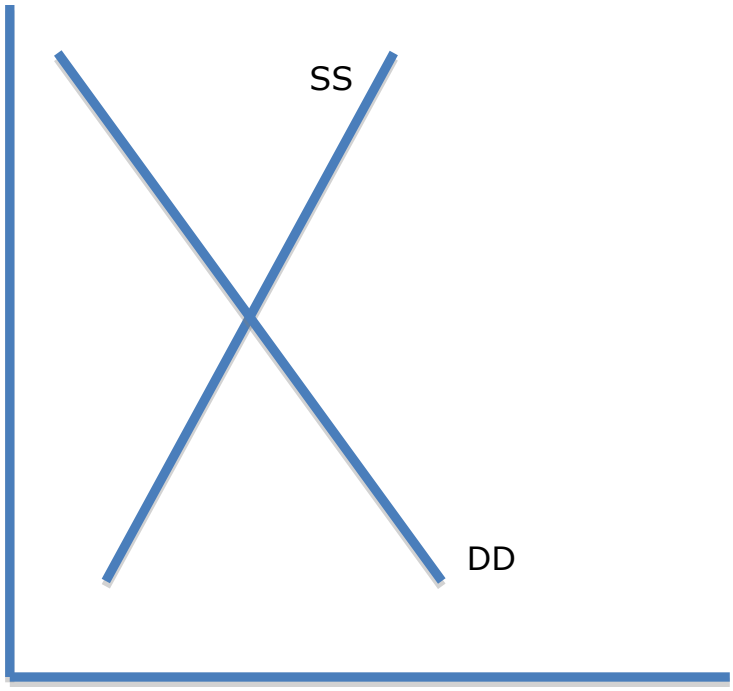
3. Efficient production assumes that GM will use the combination of plants and workers so that 100 000 cars can be produces a lowest average total cost.

MC interests ATC at minimum of ATC because
1. if MC>ATC, ATC is rising
2. if MC< ATC Is falling

Therefore intersection of MC and ATC occurs where ATC is neither rising nor falling the minimum point on ATC

Example: Q = 10 ATC = 20 => TC 200
MC = 25 |<ATC|

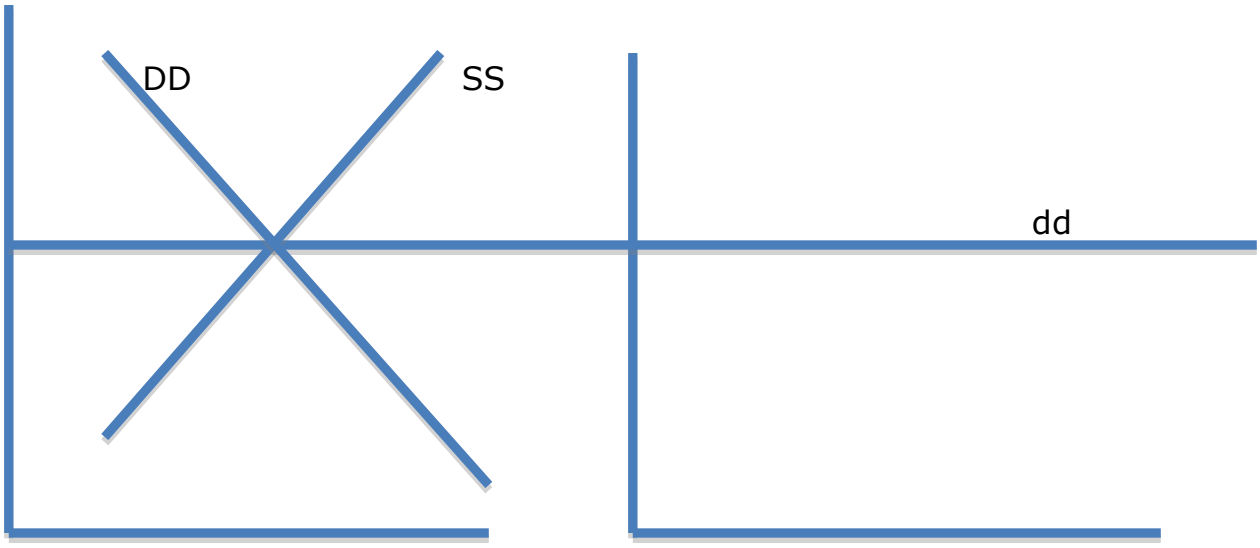
Q = 11 TC = 200 + 25 = 225
ATC = 225\11 = 20.45



Supply curve:
1. Exist only in perfect competition
2. Reflects profit – maximizing behavior

Perfect competition (perfectly competitive market)
1. Many buyers and sellers of identical product (so action of each buyer or seller exert no impact on market price)
2. Freedom of entry and exit of firms (no barriers to enter)

Key- implications:
1. Each firm is a price taker -> each firm faces on infinitely elastic demand curve at the market price
2. In the short run, the number of firms is fixed, in the long run, the number of firms can vary



Market individual firm

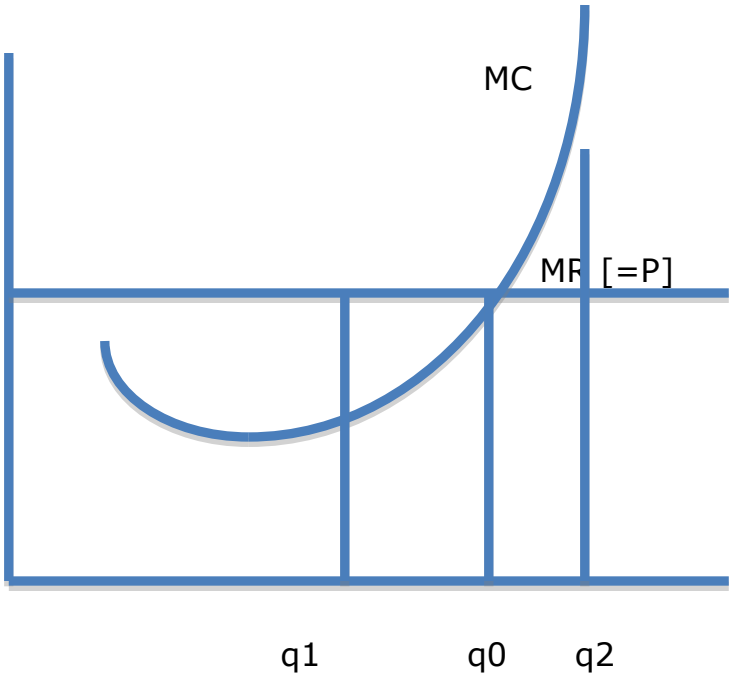
DD = market demand curve
dd = firms demand curve

Total Revenue, Average Revenue, Marginal Revenue for Perfectly competitive firm : Example

Q	P	TR (P*Q)	AR (TR\Q)	MR (deltaTR\deltaQ)
1	6	6	6	6
2	6	12	6	6
3	6	18	6	6

Perfectly competitive firm
MR = P

<u>Profit – Maximization Output</u>



At q1: MR >MC -> expand output
At q0: MR = MC -> profit maximization output (do not change)
At q2: MR<MC -> contract output

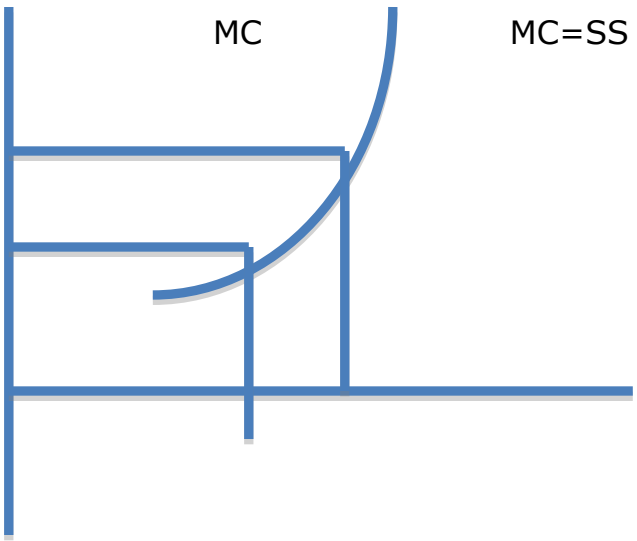
We have to know MC and MR (price) schedule to answer main questions

Supply curve

If price is _____, firm will supply _____

Profit – maximizing Firm

Answer the firm's MC curve



Observation: the higher price -> the greater output gets

Barbershop with 6-month Lease:
Should it shutdown or stay open until the lease Expires?
[Perfect Competition ← Price Taker]

Total Revenue (per month)
Q = 100
P = 15
TR = 15*100 = $1500

Total Costs (per month)

TFC (lease) = $500
TVC (barbers) = $1200

TC = TFC + TVC = $1 700

If Stay Open
Profit = TR – TC
1500 – 1700 = -200

If Shut down
Provit = TR – TC
0 – 500 = -500
Barbershop <u>should not</u> shut down

(TR = 1500) > (TVC = 1200)

TR\Q = P [$15] > TVC\Q = AVC [$12]

Shutdown Point

1. Firm shuts down if TR<TVC

[Firms incurs its fixed costs even if firm produces no output, so these costs are not relevant]

2. TR < TVC ➔ TR\Q< TVC\Q ➔ P<AVC

3. Firms' supply curve = firm's MC curve (for P> AVC)

Wednesday, November 04, 2009

Firm's SS Curve.

is

Firm's MC Curve (if P > AVC)

MC=MR(=P) profit maximizing level of output

Question: If firm is earning economic profit

To answer: add ATC schedule - > compare P to ATC

Economic Revenue = Total Revenue minus Total Opportunity Cost (Explit and Implicit).

Most Important Implicit Opp Cost: invested capital (Equity)

Invested Capital earns "normal rate of profit" -> Economic Profit = Zero

(and accounting Profit is positive)

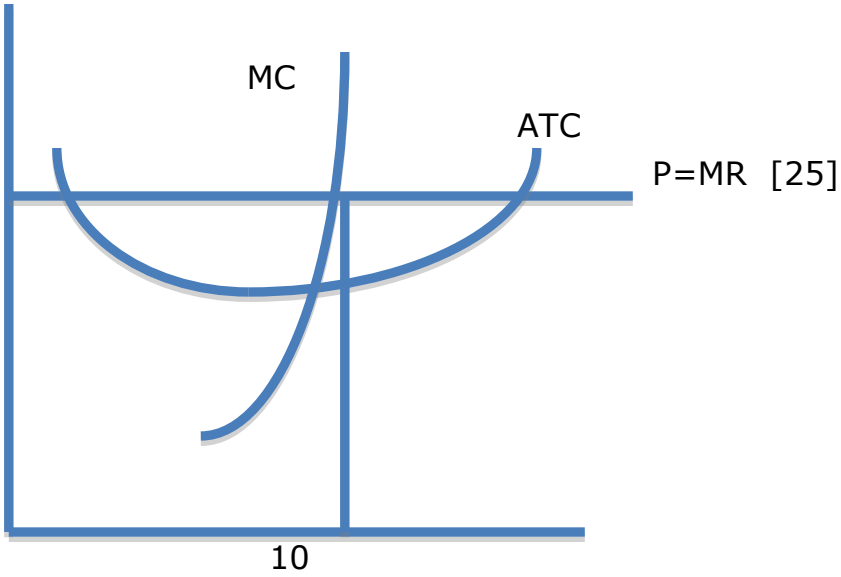
Level of profits:

TR>TC ➔ profit ➔ TR/Q > TQ/Q --> P> ATC

TR = TC ➔ breakeven (Zero economic profit), P = ATC

TR < TC ➔ loss TR/Q < TQ/Q ➔ P< ATC

Case 1: Economic Profit (P>ATC)



Profit maximizing output: 10 (P = MC)

ATC is added in order to find out if firm is earning economic profit.

Profit: (P-ATC) *q = 50

Case 3: Economic Loss (P<ATC)

Same idea, but ATC curve is above P or MR

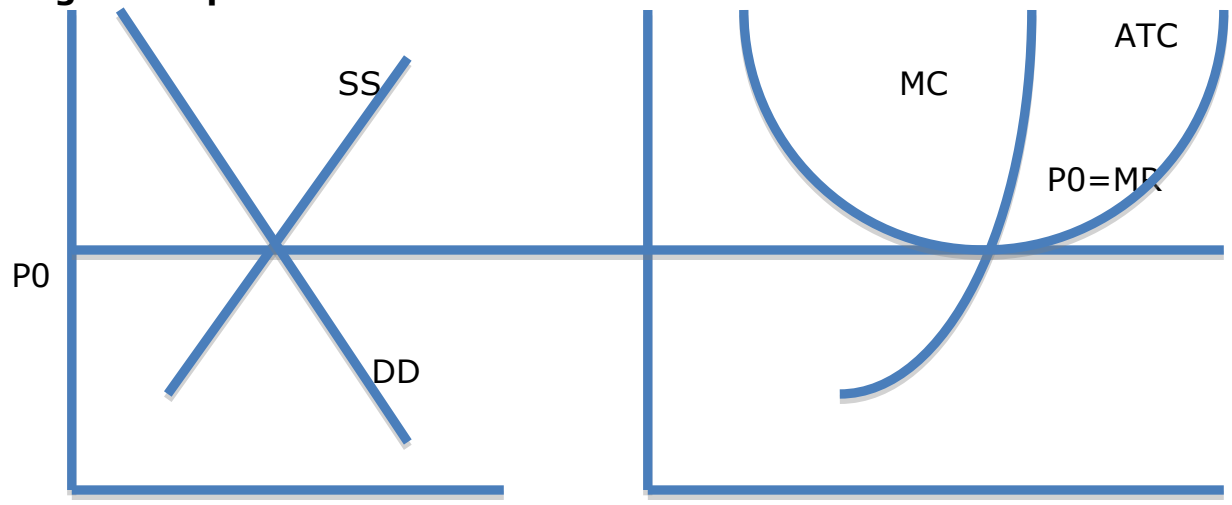
Decisions of Perfectly Competitive Firm:
Summary:

1. Choose output (q) that maximizing profits
   P =MC
2. Determine if should shut down in short – run ?
   P < AVC - shut down

(otherwise, continue to produce q)

3. Determine whether to exit industry in long-run
   P < ATC ➔ exit the industry
   (otherwise, continue to produce q)

Long-Run Equilibrium



1. Firm is maximizing profits (produces q0 where MR = MC)
2. Zero economic profit (➔ "normal rate of profit"), because, at q0, P = ATC
3. No incentive for firms to enter or exit the industry.

If firms are earning economic profits, is this a long – run equilibrium ?

If not, what happens?

Entry and Exit:

1. If firms in industry are earning (economic) profits, other firms enter (and industry supply curve shifts to right)
2. If firms in industry are suffering (economic) losses, firms exit (and industry supply curve shifts to left).

The Long – Run Industry Supply Curve

Horizontal ➔ New firms have same cost structures as existing firms

Upward-sloping ➔ New firms bid up cost of factors of production for all firms

OR

New firms are less efficient and have higher costs of production

Short – Run versus Long-Run impact of an Increase in Demand

Individual firm : in a shot run P up, Q up
Long run:

1. P1> ATC => firms earn economic profit
2. Firms enter industry ➔ SS shifts to SS1 and P falls

1. P1 falls as new firms enter
2. If constant cost industry, P1 fall to P0
3. Industry output increases from Q1 ti Q2 (more firms)

Monday, November 09, 2009

Insight

In response to higher DD by consumers :

- firms initially earn economic profits
- new firms enter industry
- market price falls (to initial level, if constant cost industry)
- economic profits are eliminated

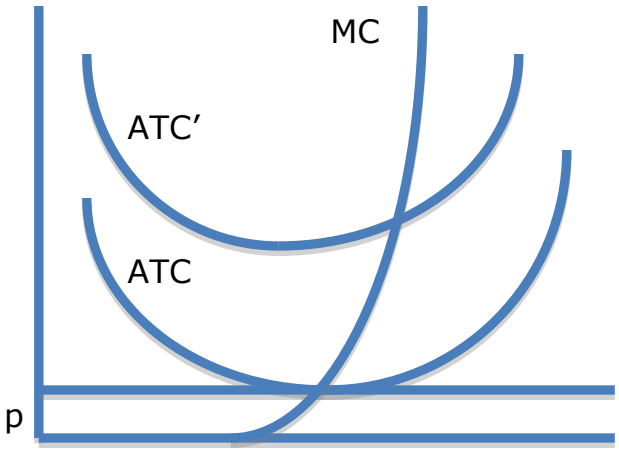
the market works !!

A perfectly competitive industry is in long-term equilibrium. The government imposes a licensing fee of $1000 on each firm in the industry.

Show what happens, in the short run and in the long-run, to market price and output?

In the short run – price will be unchanged
In the long run – price will go up

Insights
Licensing fee -> lump sum tax (doest not vary with output)
-> MC (and AVC) unchanged
-> ATC (AFC+AVC) is changed



Firms

(1) No of firms – unchanged

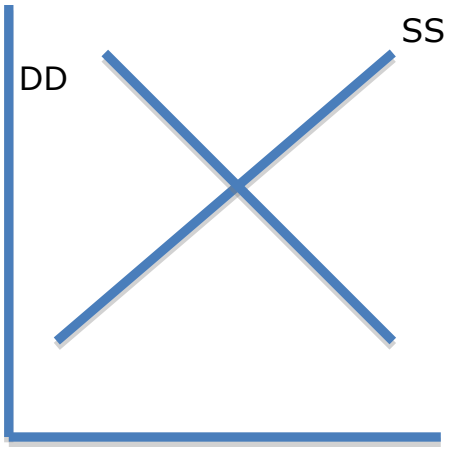
-in short 0run, firms do not exit industry
- since P0>AVC, firms do not shut down

(2) Firm output and MC unchanged -> profit maximizing output unchanged

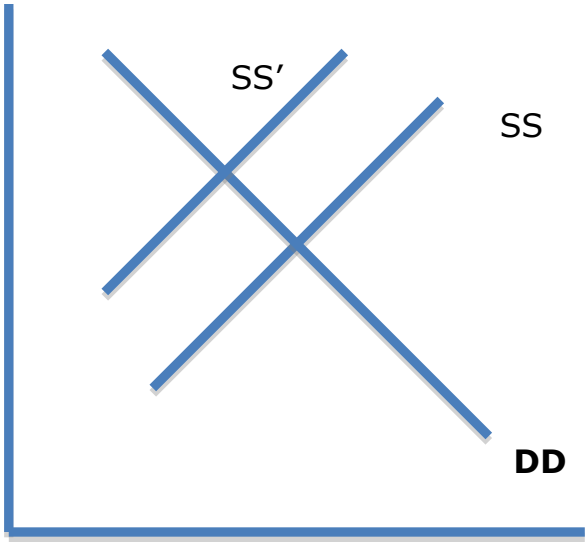
4. Industry output unchanged

5. Suffer an economic loss

Short run:



Long run



Short run -> same no of firms produce same output
In the long run -> firms will exit the industry, as the leave the industry supply curve shifts to the right, which causes price to go up

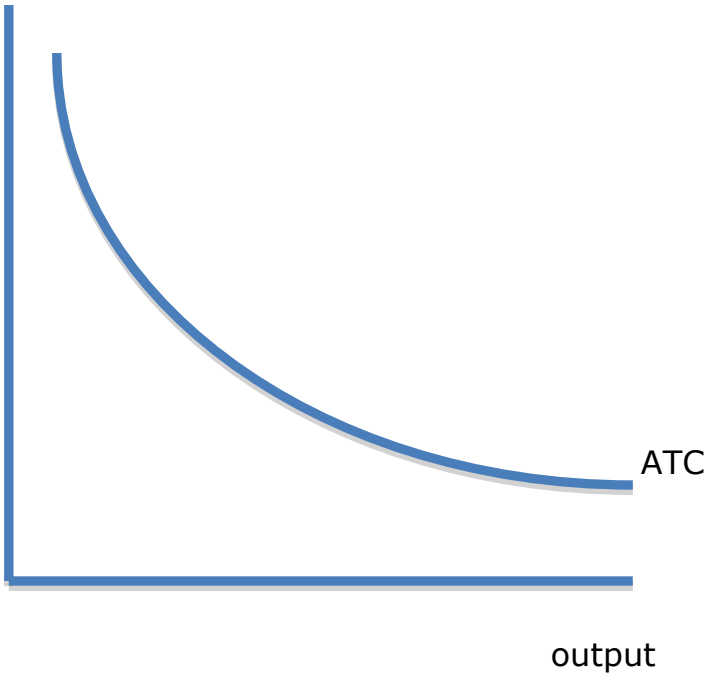
Monopoly

A monopoly exists if there is a single seller in the industry of product with no substitute.

Barriers to entry
(1) legal barriers (legal monopoly)
-post office (first class mail)
-patents

(2) natural barriers (natural monopoly)

Natural Monopoly



Natural Monopoly

1. Economies of scale (declining ATC) = barrier to entry

2. If monopolist (day, gas pipeline) is making economic profits, will new firm will enter ?

No

2nd firm would have higher ATC (as would 1st firm) if market is shared

Will monopolist:

Set highest possible price?

Earn unlimited profits?

NO!

Why? Faces downward-sloping DD

Marginal Revenue

(MR) < Price (P)

Because the market demand slopes downward, a monopolist must lower price to sell more output

Market DD

Price	Quantity	Total Revenue	Marginal Revenue
10	0	0	
9	1	9	9
8	2	16	7
7	3	21	5
6	4	24	3
5	5	and so on	
4	6		
3	7		
2	8		
1	9	9	-7

Market DD and MR schedule for Monopoly

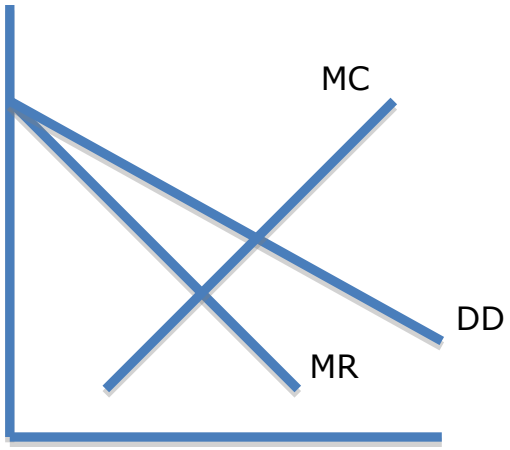
From the text book graph with DD and MR

Monopolist: to sell an additional unit of product, he has to sell the price
Perfectly competitive market: he can sell an additional unit of output at the market price.

Wednesday, November 11, 2009

Monopoly

Profit Maximizing output



1. Monopolist chooses profit maximizing output (Qm)
   where MR=MC

   At Q1, MR>MC -> expand output
   At Q2 MR<MC -> contract output

   2. To sell Qm, monopolist must charge Pm

   Observations:

   1. Monopolist cannot charge "unlimited price"
   2. No supply curve (since monopolist is not a price taker) (!!!!!!!!!)

   Why is there no supply curve?

   Monopolist produces profit maximizing output Qm

   At Q,m there is only one price (Pm) at which demand is equal to Qm

   Remember
   Supply answers the question
   "If the price is _____, the quantity supplied will be _____"

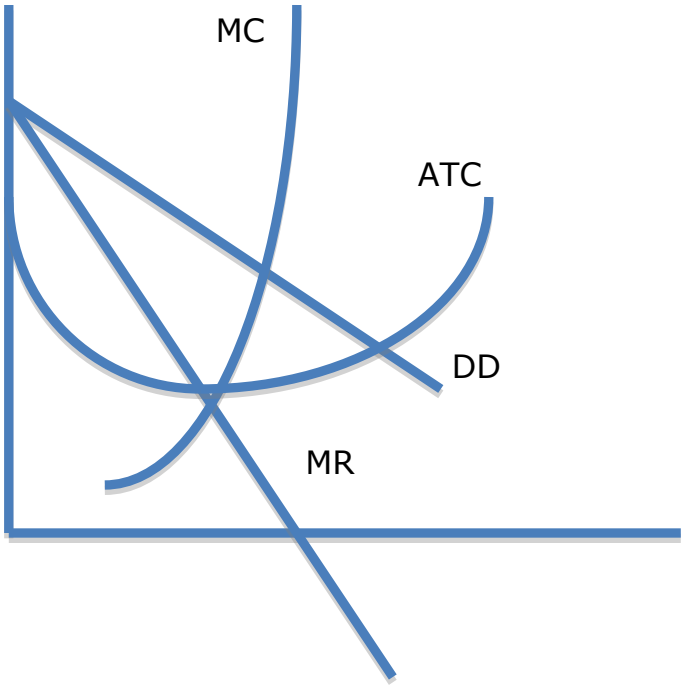
Irrelevent to the monopolist, because he will choose my output and charge price according to the demand curve.

Economic Profit of Monopolist.

P>ATC -> Profit

P=ATC -> Zero Profit

P<ATC -> Loss

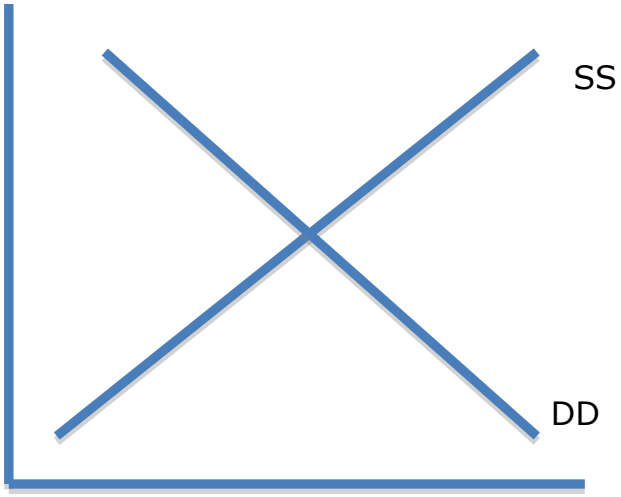


At Qm, P>ATC ➔ Economic profit

What happens to price and output if a competitive industry becomes a monopoly?

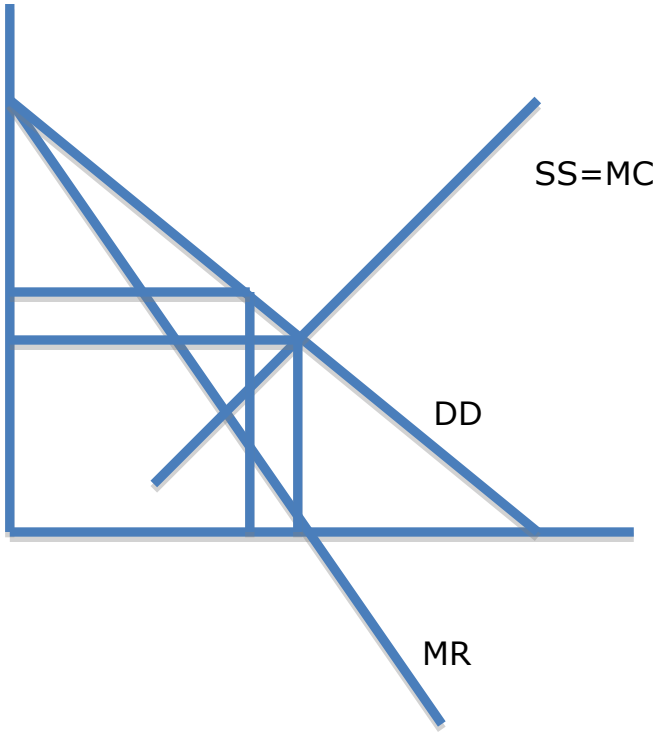
It is a perfectly competitive industry ?

Digression



Market SS = sum of firms' SS schedule

= sum of firms' MC schedules
= MC for industry as a whole
= MC of monopolists



MR<P again!!!

Results:
1. output is reduced ('contrived scarcity')
2. price increases

Insight:
Government Policy Towards New Drugs

Objective: 1. Encourage research and development
2. protect consumers from monopoly prices

Policy:
Grant patent protection (monopoly) but for limited period of time.

Period of Patent Protection: Consumers Pay Monopoly Price, after it expires consumer pays competitive price.

Monday, November 16,2009

Why firms issue, coupons ?

Why do firms offer lower prices to students, upon proof of being a student ?

Price Discrimination: Firm sells same product to different costumers at different price.

Example:

Let MC = ATC = $1 to produce a Widget
*(if marginal cost is fixed, fixed cost is $0)

1000 A customers will pay $20
5000 B customers will pay $5

Alternative strategies:

(1) P = 20, Profit 1000*(20-1) = 19 000
(2) P = 5, Profit 1000 * (5-1) = 4 000
+
5000 *(5-1) = 20 000
24 000
(3) P = 20 for customers A
price discrimination
P = 5 for customers B

Profits: 1000 * (20-1) = 19000
1000 * (5-1) = 20 000
39 000

Intuition:

Price discrimination permits monopolist to sell additional output without lowering price

Price Discrimination:

If monopolist can, will charge high price to customers with low price elasticity of demand, and conversely.

To price discriminate, monopolist (or any firm that faces downward-sloping DD) must find way to segment (separate) its customers.

Example	Insight
1. Student discounts, With student ID	Student have high price elasticity of demand (are "poor")
2. Travel restrictions (weekends, 2 week advance booking for low air fare)	to prevent business travelers with low price elasticity from getting low fares
3. Coupons	high price elasticity consumers will use coupons

Price Discrimination: Publishing

You bring the book to the store and get

Hardback: $35

Six Months later

Paperback : $10

Note: the difference in price is far grater then difference in cost

Would a perfect competitive firm profit from price discrimination?

NO

Perfectly competitive firm faces perfectly elastic demand curve ➔ is a price taker.

Why is Monopoly "Bad" ?

1. Allocative inefficient (due to reduce output)

2 NOT monopoly Profits

Monopolist's Profit?

1. If consumer pays $1 more to producer as a result of monopoly price:
Consumer worse off by $1
Producer better off by $1

2. Transfer from consumer to producer.

- Is consumer more deserving ?
- Is producers more deserving ?
- Who decides ?

3. Welfare cost of monopoly is loss in total surplus as output is reduced ?

Perfect Competition :
P = MC
Allocatively Efficient

Monopoly:
P> MC
Not Allocatively Efficient

Allocative Efficiency : A Further Note

1. The Economic Problem: the allocation of scarce Resources

Unlimited wants
Limited resources

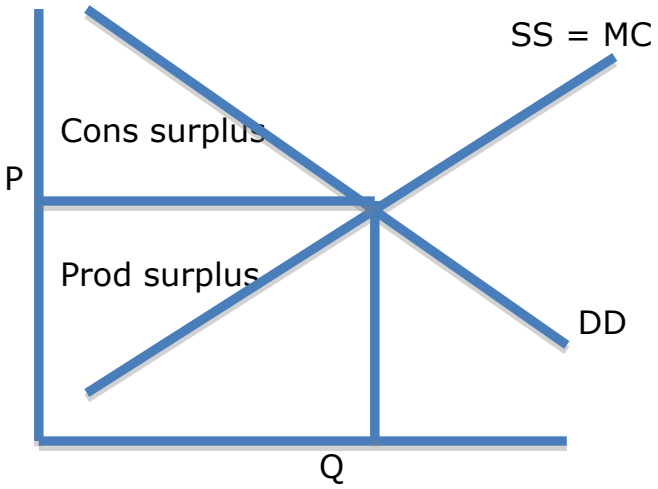
2 Imagine a Social Planner, concerned with well-being of everyone in society

3. Social Planner noted that, at current level of output (Q), P > MC value to buyer >marginal cost to produce

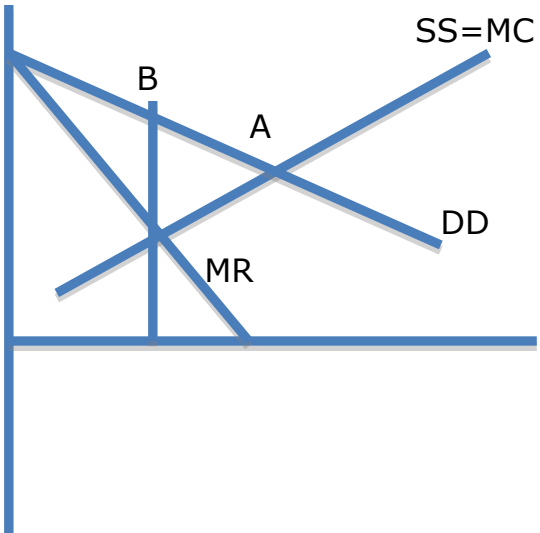
4. Social Planner would instruct that output be increased until P = MC (Allocative Efficiency)

5. Perspective in NOT that of a profit- maximizing firm, but of society as a whole.

Allocative Efficiency of Perfect Competition



A perfectly Competative industry is Monopolized



A = price with perfectly competitive
B = monopolistic price (no supply, SS=MC will be just MC)

Problem with monopoly is that they choose to produce such level of output.

Wednesday, November 04, 2009

Market Structure

Perfect	Monopolistic	Oligopoly	Monopoly
# of firms			
Many	Many	Few	One
Product			
Identical	Different	Identical or Different	No close substitutes

Example

Wheat Farmer	Family restaurants	Auto manufecture	TTC

Oligopoly: Hey Features

No single theory

Economic profits can range from nil to monopoly level

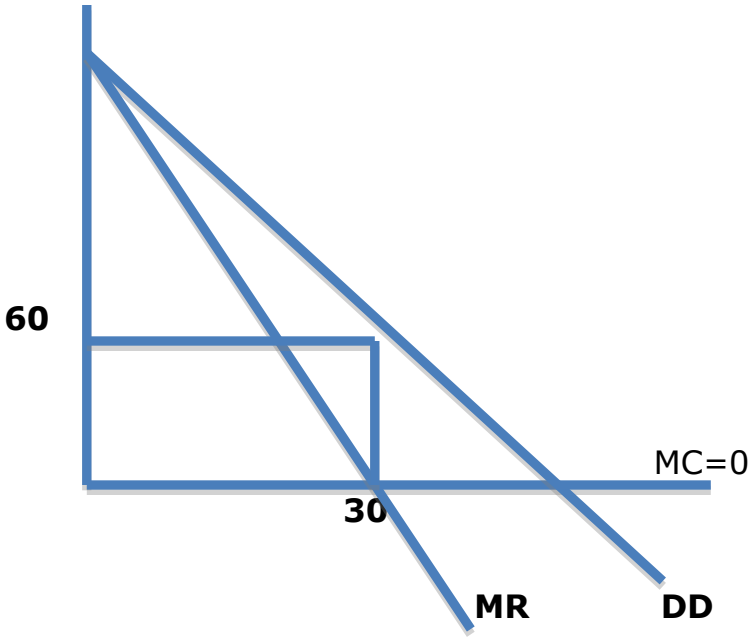
Mutual interdependence among firms is central to analysis

Two Sellers: Will they Earn Monopoly Profits ?

Assume (for simplicity) MC =0 = ATC (Eg: town wells)

Numeric example.

Monopolist:
MR=MC=0 ➔ P=60, Q=30, Profit =1800'



Duopolistic: Possible Outcomes

1. Collude (form cartel)
(1) Replicate monopoly outcome
Q=30
P=60

Profit = 1800

(2) Most allocate market share
50:50 (for example) ➔ q=15 (each firm)
profit = 900 (each firm)

2. Incentive to Cheat: Cartel may break down

How do oligopolists collude?

- By fixing prices (at monopoly level, if joint profits are maximized)
- Price fixing is illegal (so agreements cannot be enforced by the courts)
- Result: agreements (cartels) may break down.

The incentive to Cheat the Cartel: Detail
1. Firm: To cheat or not to cheat ?

(1) if does not cheat, q =15 and profit =900
(2) if cheats and increases q to 20 (say)
Market output will increase from 30-35 (Q=35)
Market price declines from 60 to 50 (since Q=35)
Profit increases to 1000 (20*50 = 1000)

Result: Firms cheat and cartel breaks down

Observation:
If firm increases q from 15 to 20
MR = 1000 – 900 = 100
MC = 0

MR>MC ➔ firms has incentive to "cheat"

2. Equilibrium (if firms choose to cheat)

(1) Each firm : q =20 ➔ Q = 40 (20+20)
P = 40
Profit = 800 (each)

Note: lower profit than if did not cheat cartel

(2) No incentive for either firm to increase output further
If firm raises q to 25, then Q = (20+25)
P = 30
Profit = 750 (25*30=750)

Summary. Observations:

1. Firms want to collude (restrict output to achieve monopoly price)
But each firm has incentive to increase output and this to cheat cartel if MR>MC

2.Difficilty to in co-operating (marinating cartel) leads to
- higher out put, lower ice then monopoly
- lower profits for each firm then in cartel

Firms might collude
One firm might cheat
Both firms might cheat

Duopolists form cartel and agree to divide market output (hence profits) 50:50

Payoff Matrix

1. If each producer one –half of monopoly output ➔ each has profit of 20
2. If each produces two-thirds of monopoly output (cheat) ➔ Ech has profit of 17
3. If one produses on-half of monopoly output and one prodices two-thirds of monopoly output ➔ firm that produese one-half : pforfit 15, firm that two-thirds profit is 22

Stratages:

1. Produce one half monopoly output
2. Produce two thirds monopoly output

A's output

A B	½ Monopoly	2/3 monopoly
½	A's profit: 20 B's profit: 20	A's profit: 22 B's profit: 15
2/3	A's profit: 15 B's profit: 22	A's profit: 17 B's profit: 17

B's output

Outcome:

1. A and B each produce 2/3 monopoly output (dominant strategy)

2. Cartel breaks down

3. In repat game, punishment strategies may lead to more co-operation

Nash Equilibrium

Each firm is optimizing, given the strategy of the other firm

Therefore , neither firm has an incentive to change its strategy

Monday, November 23, 2009

Monopolistic Competition	**Perfect Competition**
Eg: Family business	Eg: Wheat Farmer
1. Many firms	1. Many firms
2. Differentiated product	2.Identical product
(1) Downward sloping demand curve, (MR<P)	Perfectly elastic demand curve (MR=P)
(2) Advertising	No incentive to advertise
3. Free entry (exit)	SAME
(1) zero economic profit in long run	SAME
P=ATC in long run	P=ATC in long run ATC is at its minimum

Monopolistic Competition

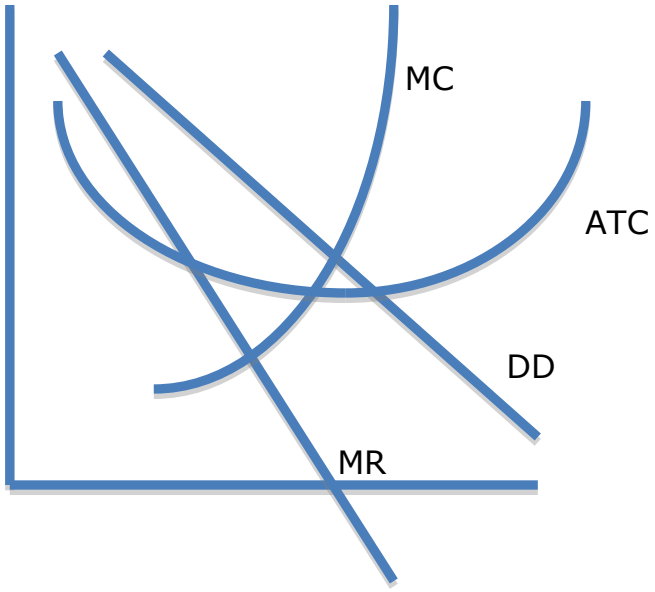
1. Firms maximize profits where MR=MC.
2. Short – run
   Firms may:

   Earn zero economic profit (P=ATC)

Earn economic profit (P>ATC)
Suffer economic loss (P<ATC)

3. Long – run
   Firms earn zero economic profit (P=ATC), due to freedom of entry/exit.

   Monopolistic Competition: Entry of New Firms



1. P>ATC ➔ economic profits
2. No barriers to entry ➔ new firms enter industry
3. New firms enter the industry ➔ DD shifts leftwards.

Monopolistic Competition: Entry of New Firms:

Suppose:

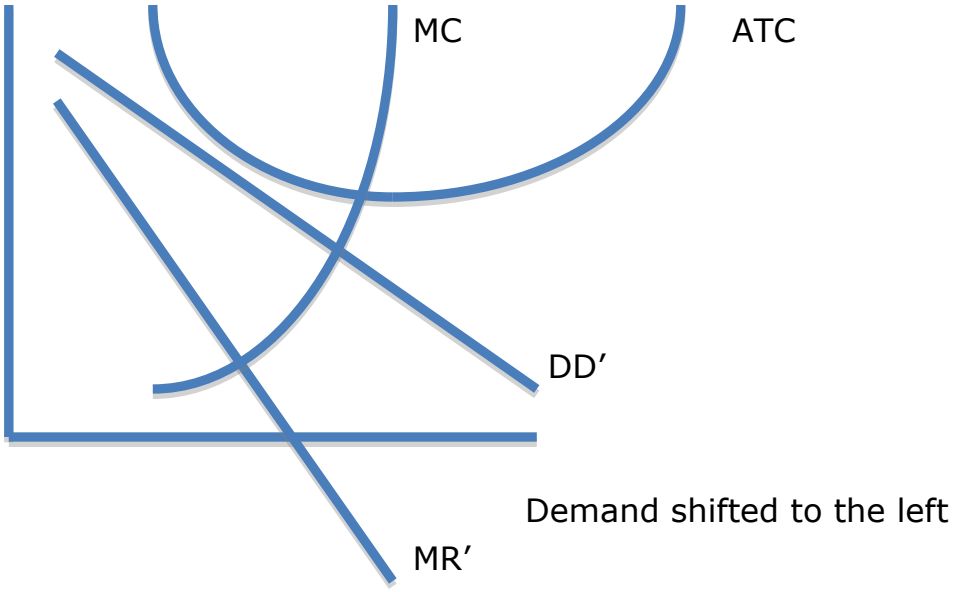
20 pizza shops
Each has 1/20 of market
Each earn economic profit

Result:

10 new pizza shops open (no barriers to entry)

Each has 1/30 of market now

- Each of initial firms now has 1/30 of market
- demand curves of initial shops have shifted leftward



1. Price will fall (due to the leftward shift of demand and MR)
2. Excess Capacity

Q1 is lower then output at which ATC is at a minimum

Results

(1) Firms do not produce at minimum ATC (unlike perfect competition)
➔ Excess Capacity

(2) P > MC (unlike perfect competition)

[tradeoff : allocatively inefficient versus greater product variety]

Perfect Competition: firms face downward – sloping demand curves

1. Monopoly have some degree of market Power
   (ability to raise price without losing all clients
2. Oligopoly
3. Monopolistic Competition

Perfectly competitive firm - demand curve is perfectly elastic

Industry in which consumers view firms' products as imperfect substitutes

Why different from oligopoly?
No barriers to enter

Mon competitive firms cannot earn economic profits in the long run

Application

Bank list 5-year mortgage rate as 5%

Yet, if customer asks, bank will often lower rate beneath 5%

Why?

Answer: Price discrimination

Customers, who do not ask: lower price elasticity
Customers who ask: higher price elasticity

General Motors
Cadillac vs. Chevrolet

Price Difference +$ 15 000 (cady costs more then chevy)

Cost difference + $3 000

Why ?
Profit margin (mark-up) is higher for luxury goods, where price elasticities are lower.

Price discrimination

Charge different price for same products to different customers

Or

Charge different price to for similar products that do not reflect difference sin cost

Price-Discrimination in E-Commerce

Issue

Amazon.com
1. obtain information (past buying, web visits regarding customer's price elasticity of demand)

2. charges higher prices, for a given book, to customers with lower price elasticity of demand

Wednesday, November, 25

Puzzle:
Car produced (Chrysler) in Windsor, Ontario sells for lower price in U.S. than in Canada.

Why?
1. Difference in costs (import duties, paperwork, etc.) ?

No

2. Differences in elasticity of demand?

YES

(In Canada, import duties are higher, so fewer substitutes and lower price elasticity of demand)

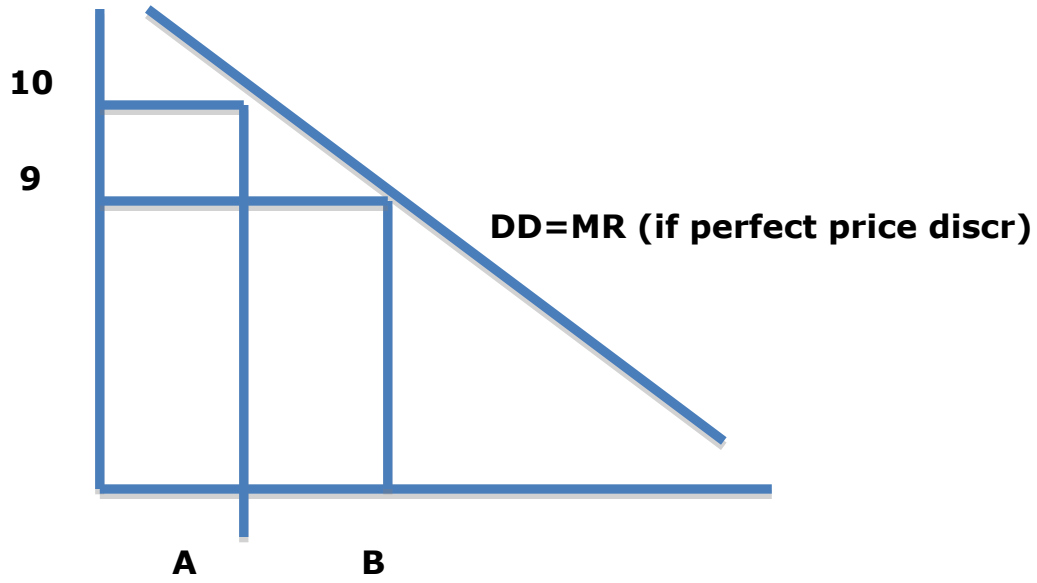
Explanation: Price Discrimination

Perfect Price Discrimination.

Monopolist charges each consumer the maximum price the consumer is willing to pay

1. Each customer pays "reservation price"
2. Is Allocatively Efficient

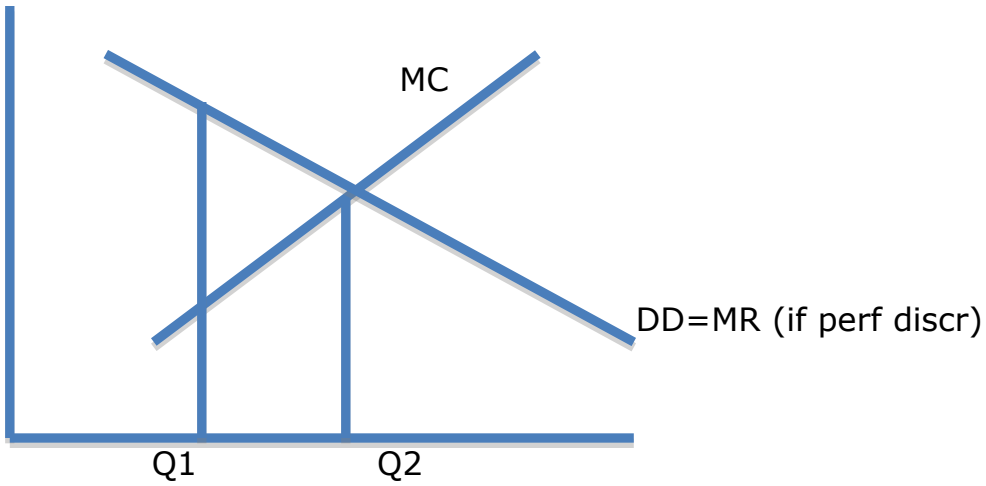
Examples
Used car salesman
DD=MR since do not have lower price on all prior units to sell an additional unit



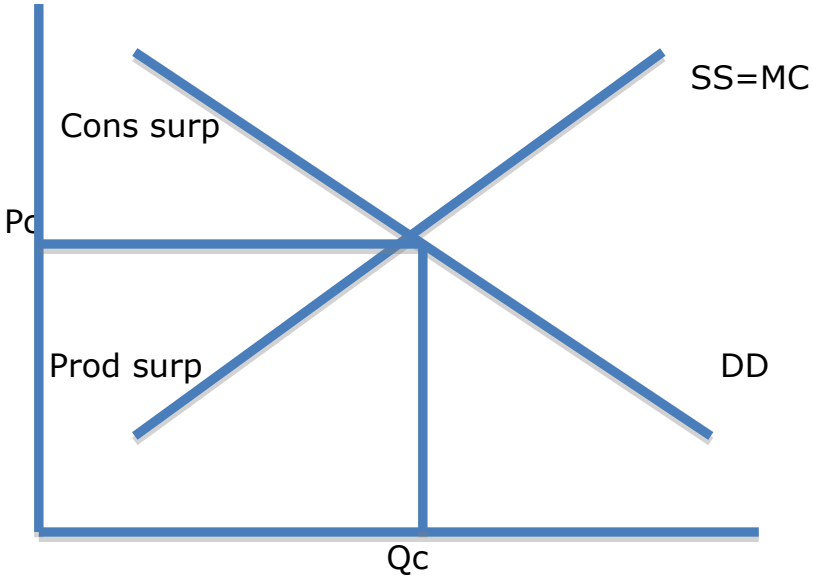
If output does up form 1 to 2
A still pays 10, while B pays 9

Results:

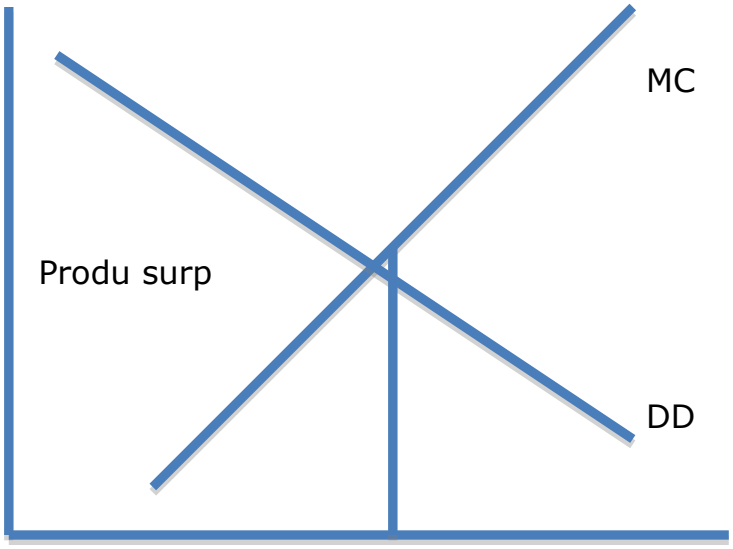
1. DD curve becomes MR Curve
2. Profit – maximizing occurs where MC=P (as in perfect competition)
3. Output is same as in perfect competition
4. Outcome is allocatively efficient



Perfect competition



Perfect price discrimination by Monopolist



Consumer Surplus : Decreases to zero

Each consumer pays the highest price he/she is willing to pay, such what the monopolist can achieve with perfect price discrimination

Producer surplus: Increased by consumer surplus
+
deadweight loss

Profit = producer surplus only of

1. TFC = 0
2. MC is constant

(figure 15.1 of text, which does not make this point clearly)

Assume wages are only variable cost

Insight
Flat MC ➔ no worers would work at less than market wage (opportunity cost = market wage)
➔ no producer surplus to workers

Rising MC ➔ some workers would at less than market wage (opportunity cost < market wage)
➔ producer surplus to workers

Imperfect Price Discrimination

1. Second- degree price discrimination

Charge different prices to some customers for different units
Price discounts for buying in bulk

Example: (1) Monthly TTC card vs single fee
(2) 24 bottle case of mineral water vs. single price

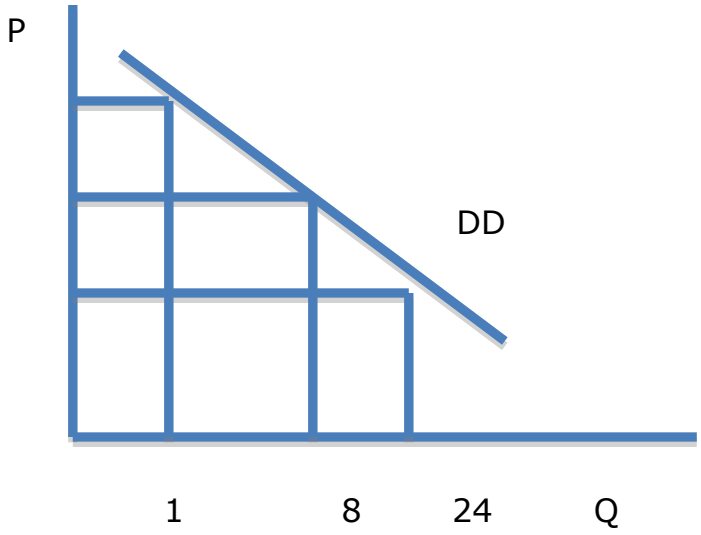
Insight

Individual's demand curve is downward sloping: seller sets higher price for first unit consumed and lower price for subsequent units

EG: Bottle Water

1 bottle $1
12-botle case $8 Average(0.67)
24 bottle case $12 Average (0.50)

Price discrimination



Third degree price discrimination

Market can be segmented into different consumer group who have different elasticity of demand

Eg: Price discounts for students

Profit-maximizing :
MRa=MRb=MC

MRa=MR for customers group A
MRb = MR for customers group B

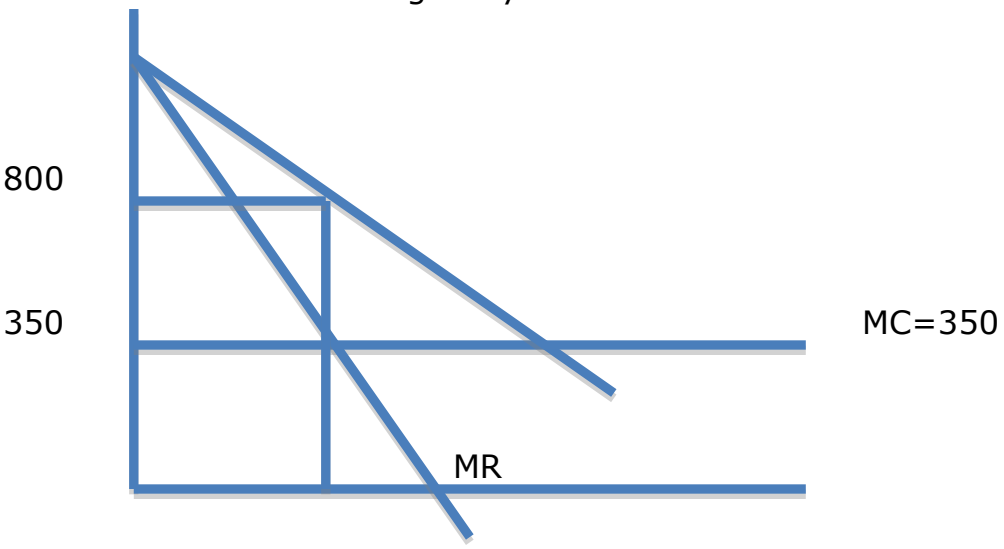
Would a firm that sells appliances ever deliberately dent/scratch its refrigerators ?

Monday, November 30

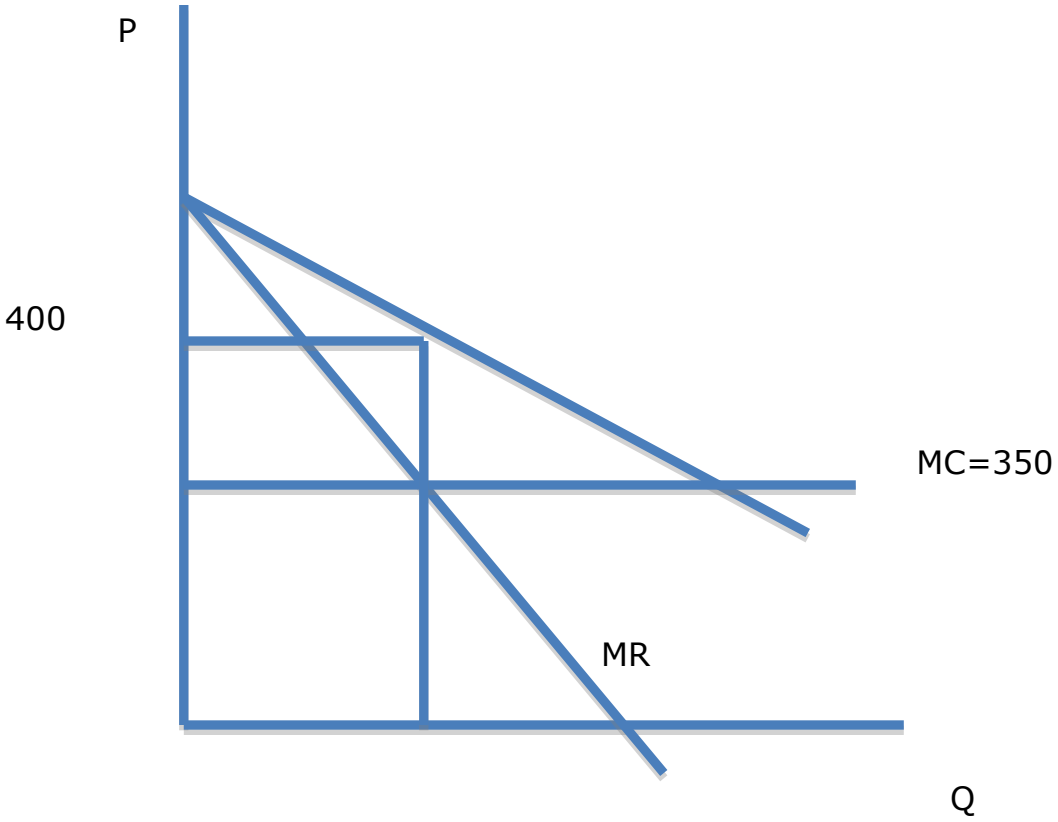
1. Not perfectly competitive firm
   Faces downward sloping demand curve

2. Some degree of market power
3. Price discrimination as tool to maximize profits, if can segment the market
4. Dented/ scretched refrigerator as means of segmented market
5. If MC< $400 may prove profitable

Costomers who are willing to ay full amount



Customers who will buy demanded refrigirator



Third Degree Price discrimination

Sellers is able to segment market into different customers groups with different elasticity of demand

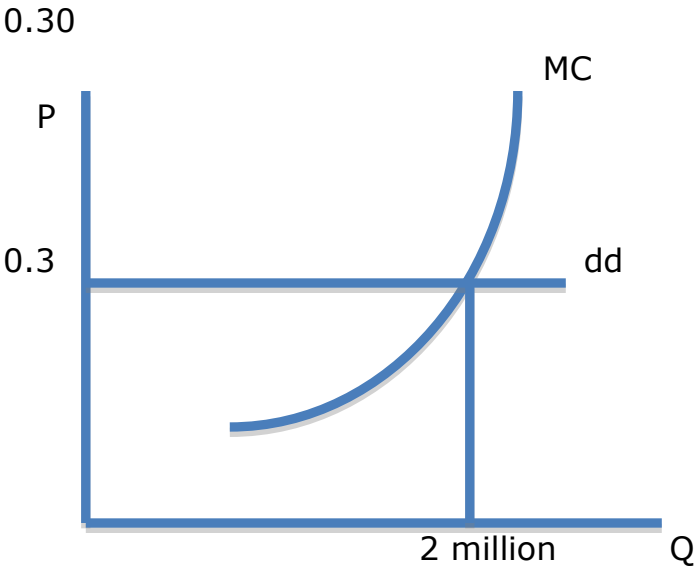
In each of segments, will produce when MR=MC

- different prices for different customers' groups
- customer groups with high price elasticity of demand will have low price

Insight:
Any imperfectly competitive firm <u>may</u> be able to profit from 3rd degree price discrimination. If all customers are alike, you cant benefit from price discrimination

The licorice industry is perfectly competitive. Each firm produces 2 mil strings of licorice per year. The strings have an average total cost of 0.2, and they sell for 0.3

What is the marginal cost of a string of licorice? Explain your answer.



Profit maximizing : P=MC

P=0.3

=> MC=0.3

Suppose the book – printing industry is perfectly competitive and is in long run equilibrium.

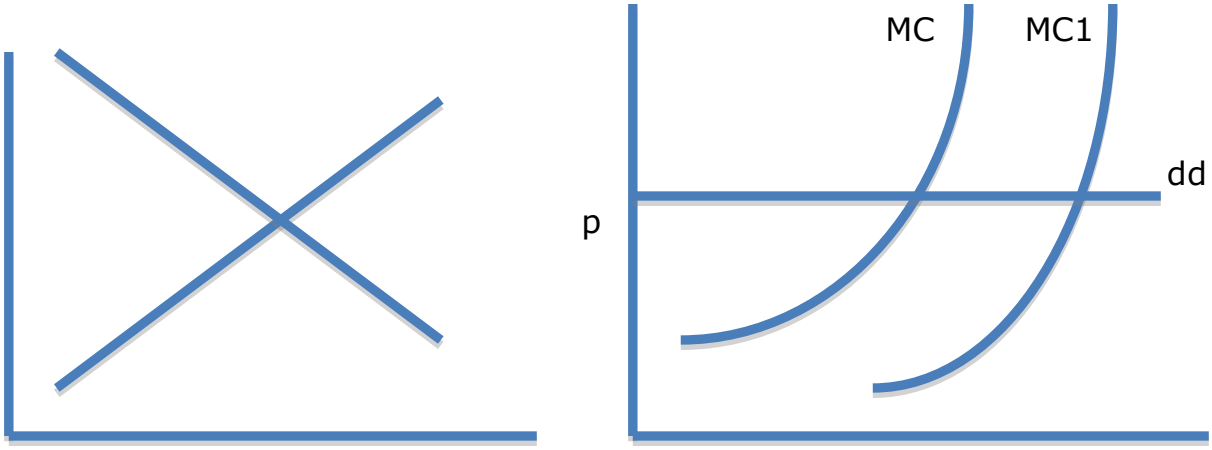
One of the frims n the industry, Hi-Tech Printing, invents a new process that sharply reduces the ,marginal cost of printing the new book. In the short-run the other firms are not able to copy the new technology. In the short-run what happens to:

1) Hi-techs level of output?

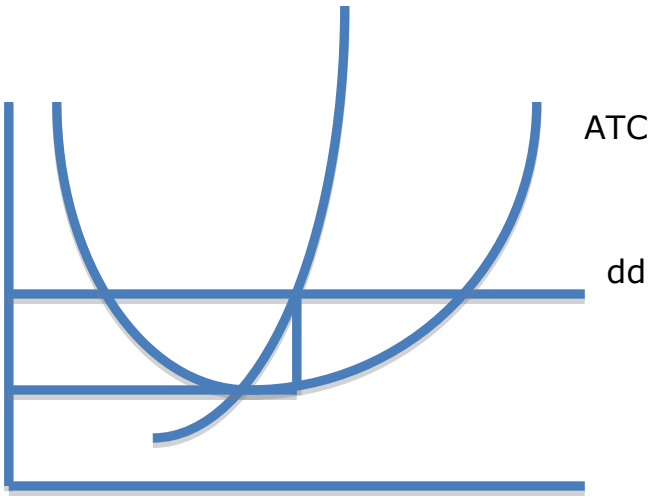
2) Hi-Tech's profits
3) The price of books?

Answer:

1. output will increase
2. profit will increase
3. price will be unchanged (each firm= is a price taker)



MC was shifted downward



Initialy they were earning 0 economic profit

ATC will now be less then price and high-tech's profit will be

3. P does not change all firms – includinf Hi-Tech – are small relative to the size to the market so each firm is a price taker.

A monopolist is earning economic profits.

What happens to:

(1) price

(2) Quantity

If Government removes $2 per unit excise tax ?

Key: MC shifts down by $2

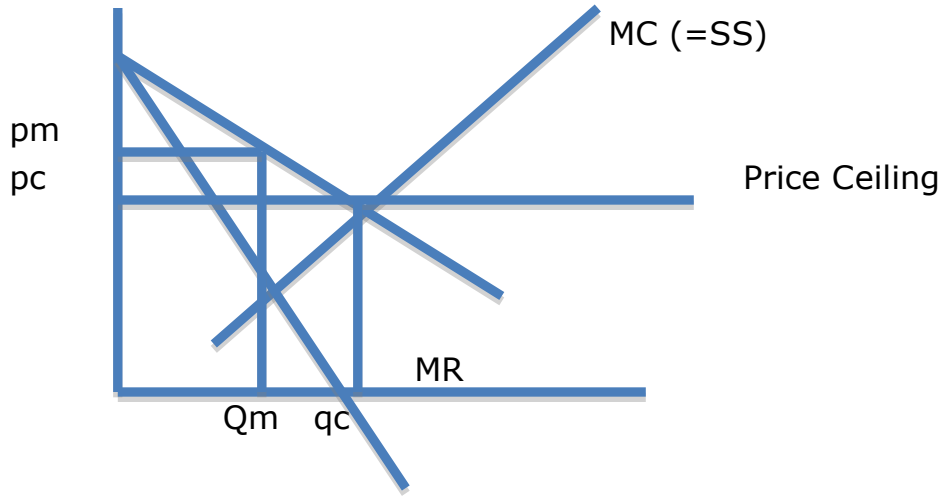
Q goes down, P goes up.

Question.

True/False

The government imposes a price ceiling on a monopolist at the price that would prevail under perfect competition. As a result of this lower price, the profit-maximizing monopolist will increases its level of output to the perfect competition level.

True



Price ceiling becomes a MR for the monopolist

Monopolist does not need to reduce price to sell additional output

Wednesday, December 02

Law of Diminishing Returns (LDR)

If successive amounts of a variable factor are added to a fixed factor, then…

MP ultimately falls and thus MC ultimately rises

What if MC is constant in the short-run ?

Case #1: MC is constant and equal to ATC

Implication: fixed costs are nil and LDR does not apply

Case #2: MC is constant and there are fixed costs
Implications:
(1) ATC continually falls ("Natural Monopoly")
(2) LDR is violated

How to Regulate a Natural Monopoly?

Natural Monopoly.

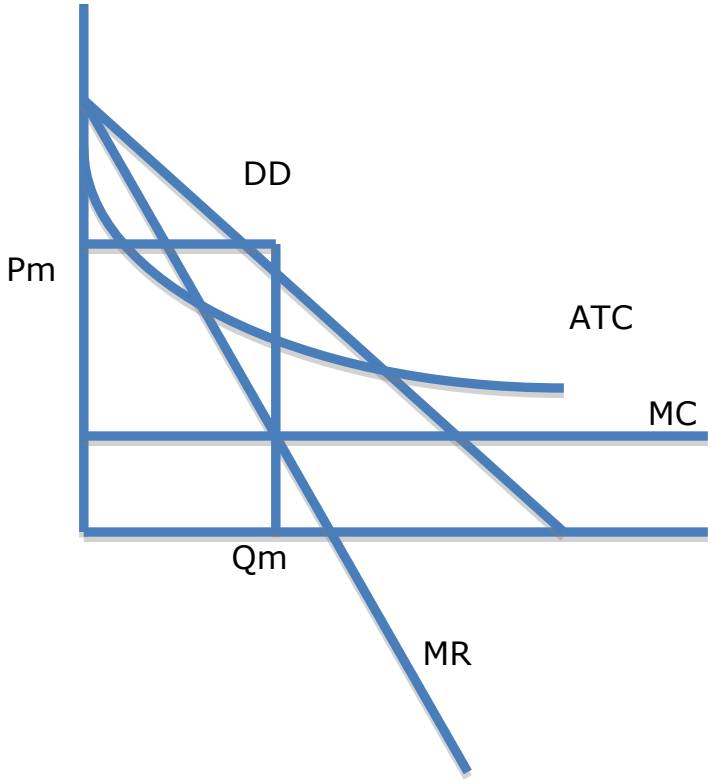
High fixed cost + low marginal cost

➔

1. ATC declining

2. One firm can supply entire market at lower ATC than 2 or more firms
3.

Unregulated Natural Monopoly



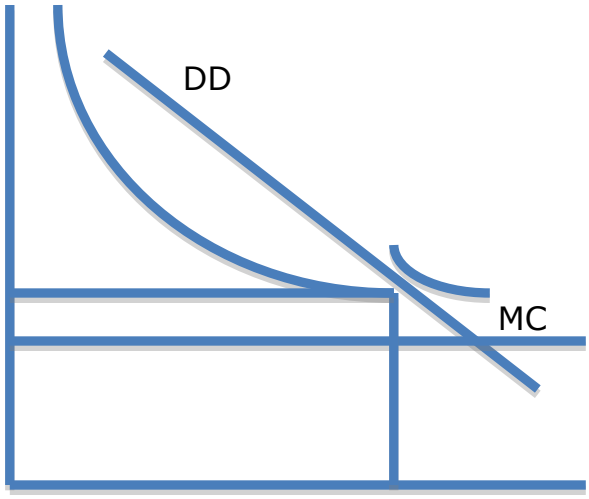
Regulating a Natural Monopoly

1. Set P =MC

Implication:
Then the monopolist has to set price = MC, then MR becomes MC curve

1. Allocatively Efficient
Value to buyers (P) = MC of producer
2. Monopoly suffers an economic loss (P < ATC) so government must provide subsidy equal to shaded areas (econ loss)

1. Set P = ATC



1. Not Allocatively Efficient
Value to buyers (P) > MC of producer
2. Monopolist "breaks even" ➔ earns zero economic profit
3. Problem: monopolist has no incentive to control costs

A monopolist is in long run equilibrium and earning economic profis equal to $100 million. The government imposes a lump sum tax of $100 million on the monopolist. (A lump sum tax is a tax that the monopolist must pay regarless of its level of output) Will this tax:

a) cause the monopoly to produce a different level of output?
b) Alter the monopolist's economic profit
c) Be allocatively efficient ?
d) alter the demand curve for the monopolist's product ?

Answers

a) No. MR= MC unaffected
b) Yes. The monopolist's economic profit will now be 0

c) No, P > MC so output is allocatively inefficient (although the government has taxed away all of the monopolists cononomic profit)

Look over when the DD changes

Does Ban on TV Advertising help Cigarette Producers ?

Payoff Matrix (No Ban on advertising)

Monday, January 04, 2010

Factors of production
Labour
Capital (equipment, structures)
Land

Firm Produces Widgets
(Perfect competition)

1. Labour is the only variable factor of production(principle of diminishing marginal product applies)
2. Price of widgets : $5
3. Wage rate $150 per day

No of Workers	TP	MP	VMP (Value of marginal product)
0	0	-	-
1	50	50	250
2	90	40	200
3	120	30	150
4	140	20	100

How many workers will the firm hire ?

Insight
Firm will not hire a worker unless VMP is at least equal to the wage rate

Example
If wage rate is 200, firm will not hire the 3rd worker (since VMP of 3rd is $150)

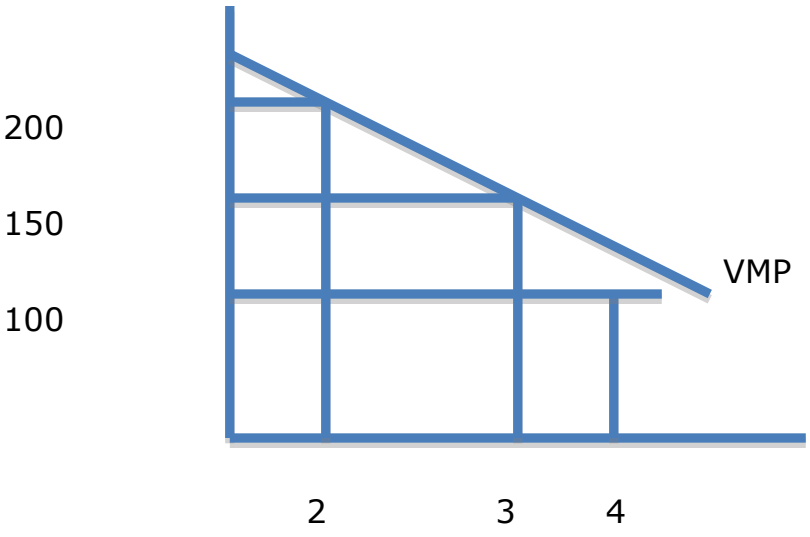
Maximizing Profits

Firm hires workers until VMP = W
If N=2, VMP >W ➔ hire more workers

If N = 4, VMP <W, ➔ fire fewer workers

If N = 3, VMP = W ➔ profits are maximized

VMP schedule = Demand for Labour Schedule



If wage = 200, firm will hire 2 workers

= 150, firm will hire 3 workers
= 100, firm will hire 4 workers
⇔

VMP = Demand for Labour

P = MC

Choose q to maximize profits

W = VMP

Choose labour (N) to maximize profits

Insight
If labour is only variable factor of production, then firm's choice of output is also the firm's choice of labour

VMP = W, and P = MC are equivalent
VMP = W

➔ VMP/MP = W/MP
➔ P = MC

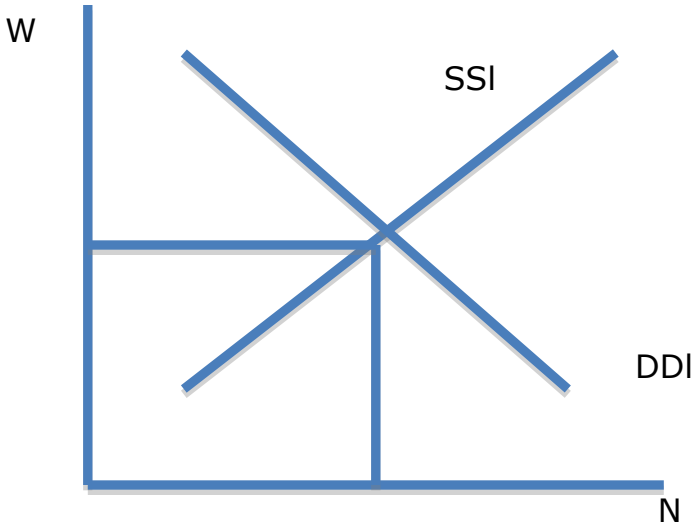
Note: (P*MP)/MP = P
W/MP = MC

Factor Markets

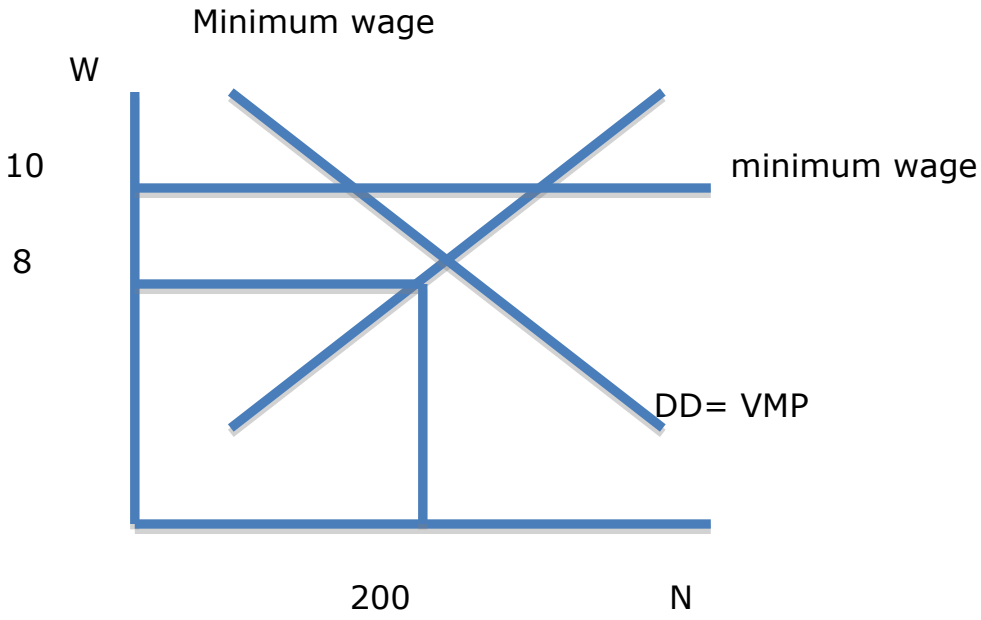
1. DD and SS
2. DD reflects profit maximization

Minimum Wages Revisited

3. Respond to Changes in Production (Final Goods) Markets



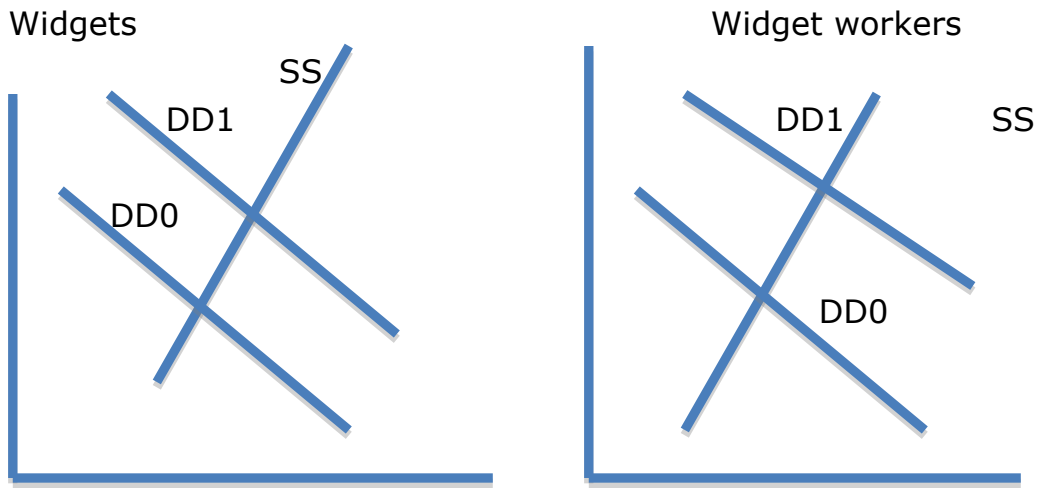
1. Assume SS is upward sloping
2. Shifts in DD and SS alter wage (W) and employment (N)
3. Equilibrium wage (W) is VMP of last worker hired



Unskilled Labour

Minimum wage rate> $8 ➔ employment (N) falls

Interdependence of Product and Factor Markets



Insight

Price of widgets goes up (consumers value widgets more)

Wage of widget workers goes up (produce a good with greater market value)

Wednesday, January 06

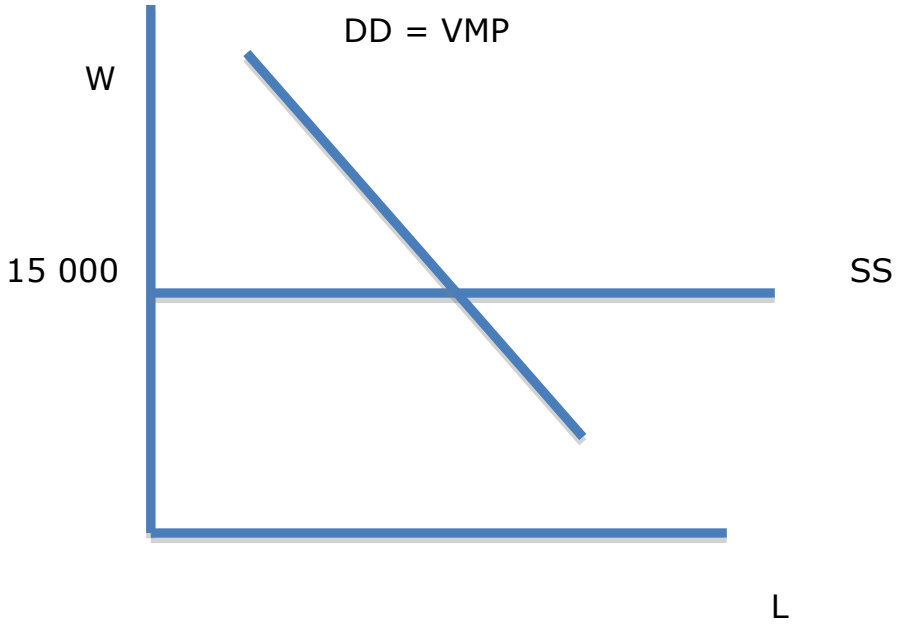
Markets for Factors of Production

Demand curve derives from the profit maximizing behavior of the firm.

Application

1. Day care workers [perfect elastic supply]
2. Hockey stars [perfectly inelastic supply]

Day Care Workers



Elastic Supply of (low opportunity cost) workers

Day Care Workers: A counterfactual Example

What if all workers could earn $40000 per year as a computer programmer ?

SS will shift from 15000 up to 40 000
➔ wage rises, but Q falls

True or False ?

The price of hockey tickets is high because the salaries of hockey stars are so high ?

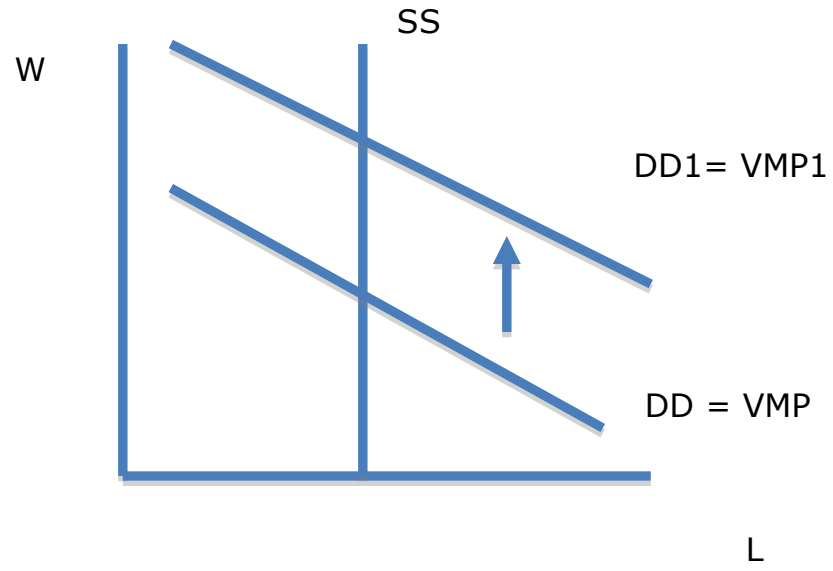
Supply of hockey stars is perfectly inelastic

(would doubling salaries increase the number of stars ? NO)

Result

Salaries are high because the demand for tickets is high.

Perfectly Inelastic Supply of Hockey Stars



1. If demand for tickets is high, wage will be high [w' = VMP = P'*MP]

2. If demand for tickets is low, wage will be low

Compensating wage differentials

Assumption

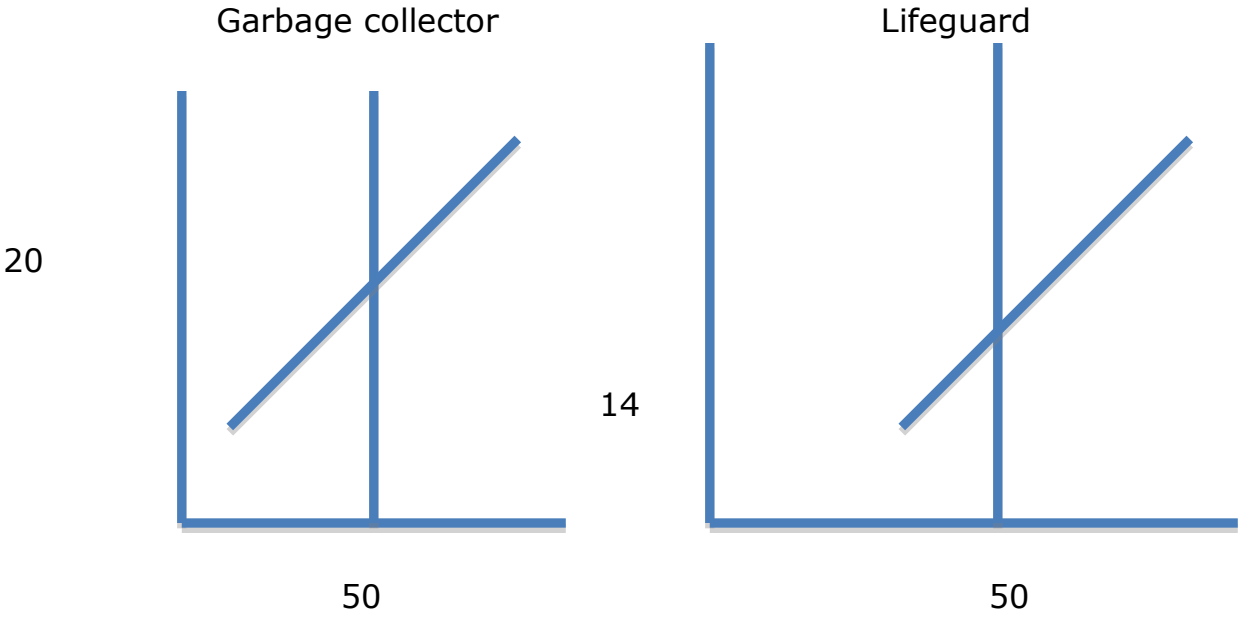
1. 100 students, qualified for 2 summer jobs

life guard: 50 jobs
garbage collector 50 jobs

3. All students prefer to work as lifeguards
4.

Result

Wage rate is higher for garbage collector because people dislike to work as a garbage collector therefore supply is



Superstar versus everybody else?

1. Celine Dion (singer): 30 million per year
   Tiger Woods (golfer): $30 million per year

2. Slightly less talented professionals: $ 50 000 per year

3. Earnings differential has increased sharply over time

Can VMP ('Economics') Explain ?

"Winner – Take- all" Markets

VMP (plus impact of technology)

Singers

Now: income derived from CDs (everyone can consume the "best")

19h century : income derived from concerts

Golfers

Now: Income derived from TV (everyone can consume the best)
19th century: income derived from ticket sale at tournaments

"Best" plumber earns (modestly) above – average hourly wage

NO

Reason: all consumers cannot consume services of "best" plumber

Monday, January 11, 2010

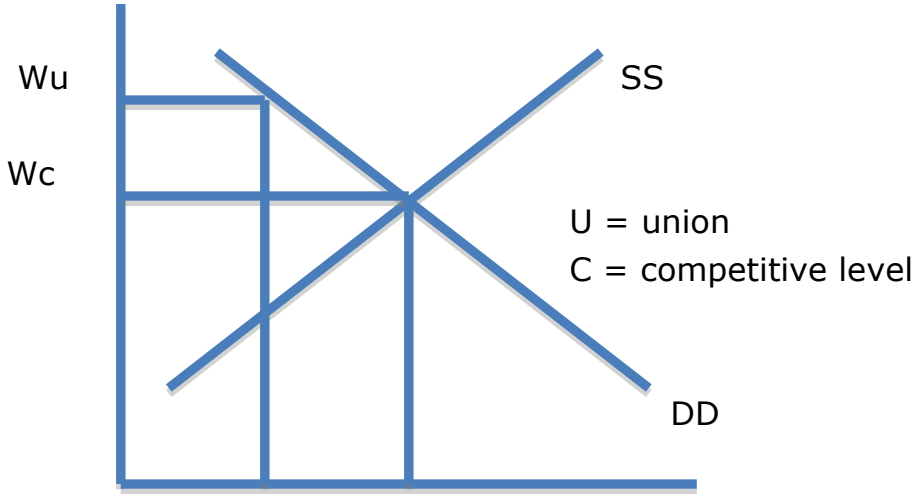
Labour Markets

1. The Impact of a Union
2. Correlates of VMP
3. Male-Female

Do Unions Increase:

Wages ?
Jobs?

Impact of a Union



Union raises wage rate (Wu > Wc)
Union Reduces employment (Nu< Nc)
In this undustry

Economics W = VMP

1. Discrimination: Differences in wage not explained by difference in VMP

Application
Canada

	Full-Time Earnings	Percent Females
Librarians	54k	77.2
Civil Engneers	72k	9.2

Pay equity (Comparable Work)

1. Concern: certain jobs held mostly by females pay less then "comparable" jobs held mostly by males

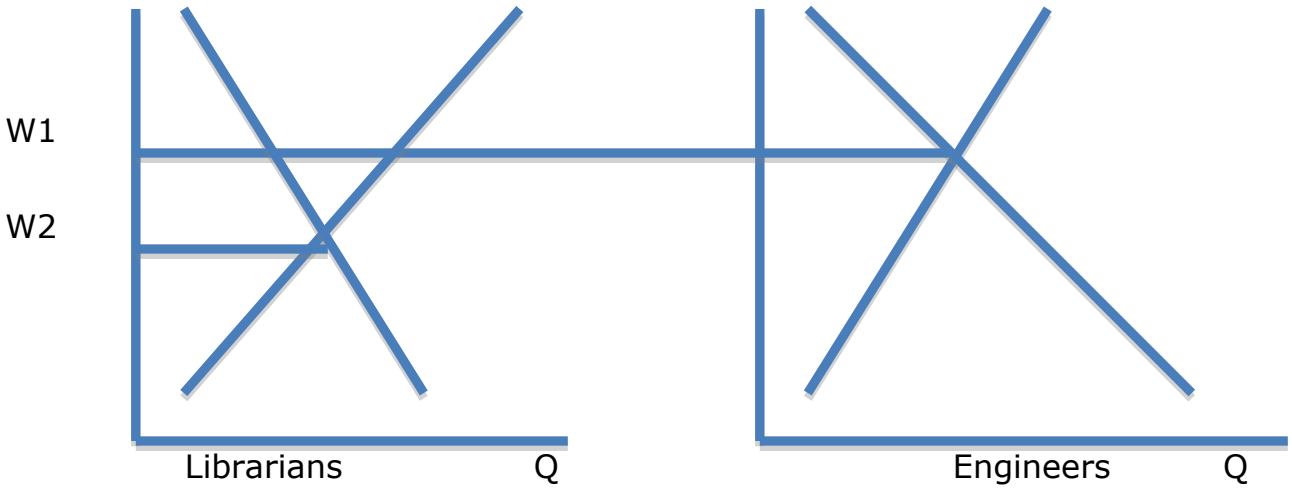
2. Economic issues

2.1. Do differences in earnings reflect differences in productivity (VMP) or discrimination?

2.2. DD, SS and unintended side effects

Librarians and Engineers

1. Earnings Differences



2. Pay Equity : Legislate Wl = We

Result: Excess supply of librarians
Employment of librarians declined

3. After Pay Equity: Suppose Demand for Engineers Increases

DD shits to the right, W increase. Q increase.

(1) If W unchanged. Excess demand for engineers(Shortage)
(2) If W rises to W, then :
i. if w, does not rise, violate pay equity
ii. If w, does rise, employment of librarians falls further

Full-time workers, university , age 25 to 34
Male $61,944
Female $47 520 (76%)

3. Differences I VMP or discrimination?

Hours of work (males work more~ 10% more)
Occupation (librarian vs engineers)

Externalities

Definition:
1. Transaction between buyer and seller affects third party

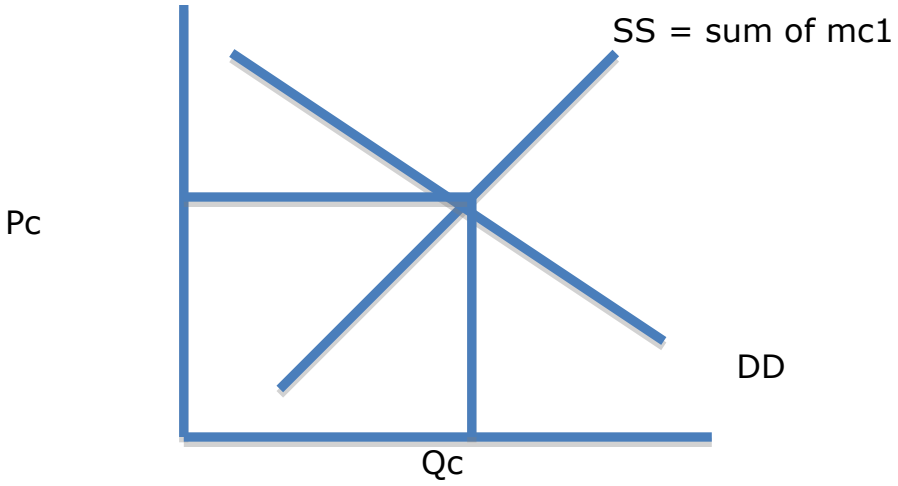
Example:
Pollution (production externality)
Alcohol (consumption externality)

2. Insights

1. In general, market outcome is not efficient (market failure) and government intervention can improve market outcome

2. When all parties affected by externalities can negotiate, market outcome may be efficient

Competitive market



1. Allocative Efficiency (No Externalities)

P = MC

Value to buyer cost of production

If third parties are affected ("externality") competitive outcome is not allocatively efficient

Important example : pollution

Two Anti-Theft Devices

1. Theft Club (steering wheel of car)
2. Silent Auto – Tracking Theft Device

Positive Externality ? (Do total thefts falls?)

1. No
2. Yes (thefts fall sharply in cities in which many cars have silent theft device)

Wednesday, January 13, 2010

Market: Aluminum
External cost: Smoke ($10 per Tonne)

Price	QD	QS	Qabtity supplies after $10 tax
15	80	40	20
20	70	50	30
25	60	60	40
30	50	70	50
35	40	80	60
40	30	90	70

Market Outcome : P = 25, Q = 40

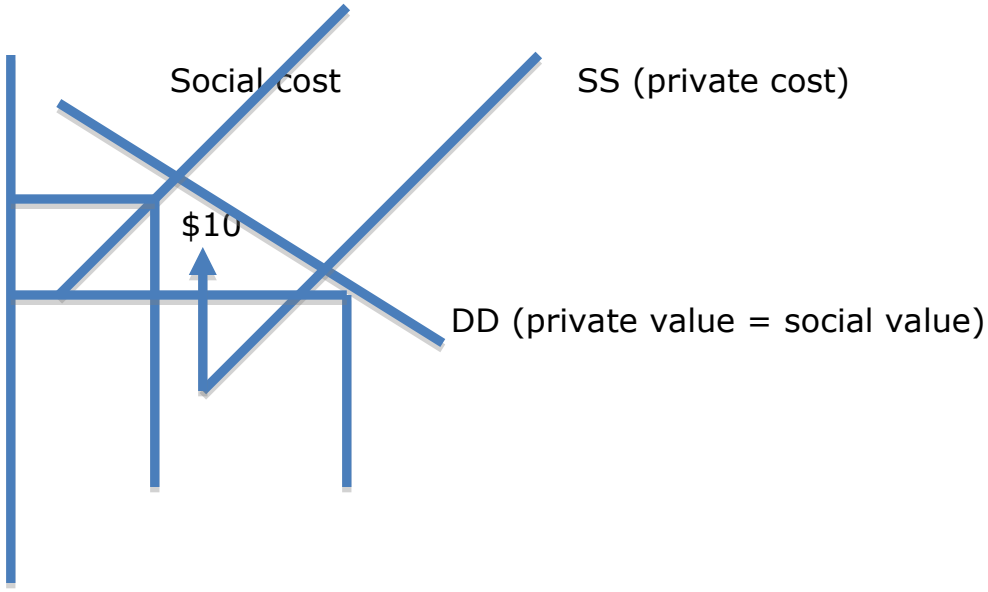
P = (private) MC = 25

But:
Social MC = (private) MC + $10

Allocative Efficiency (No Externalities)
P = MC

Social cost = private cost + Externality Cost

Allocative efficiency if production Externality
P = social MC

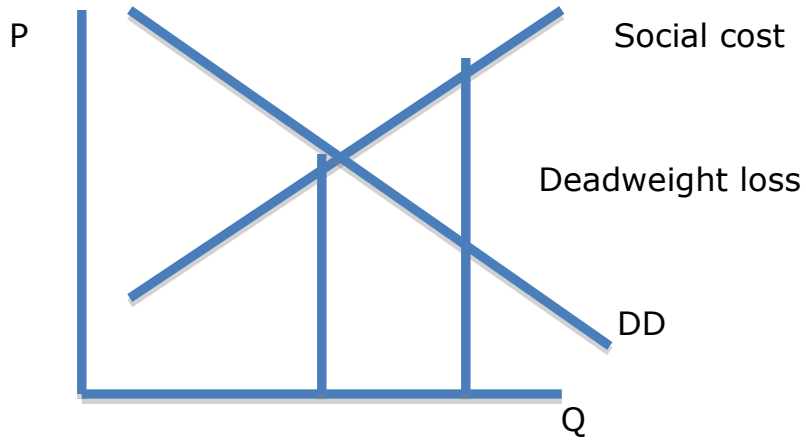


1. Market outcome is inefficient

   If price in the market doesn't reflect the real price of production that good then the outcome is inefficient

If private cost = social cost then the outcome is Efficient

2. Result
   Private market overproduces aluminum
   Private market underprices aluminum



Remember

1. Most goods: social cost = private cost

➔ market outcome is efficient

2. if social cost is not equal to the private cost, social cost must be reflected in market outcome to achieve efficiency

Government imposes $10 tax (per tonne), to be paid by sellers

1. SS shifts upward to SS'
2. Achieve allocative efficiency (at q = 50, price = social cost = 30)
3. Incidence of Tax

   Price received by sellers : market price – 10 = 20

(Versus 25)

Price paid by buyers: market price = 30
Versus 25

Output (and employment) in aluminum industry decline
Consumers of aluminum pay a higher price

Carbon Tax: Tax on energy sources which emit carbon dioxide

1. Carbon dioxide: negative externality (global worming)
2. Impose $0.5 tax per litre on gasoline, to be paid by seller. What happens to:

2.1. Market price of gasoline?
2.2. Consumption of gasoline ?
2.3. Amount of carbon dioxide?
2.4. Consumption of alternative energy sources (solar, wind) ?

Monday, January 18, 2010

Allocative efficiency <u>if</u> consumption externality

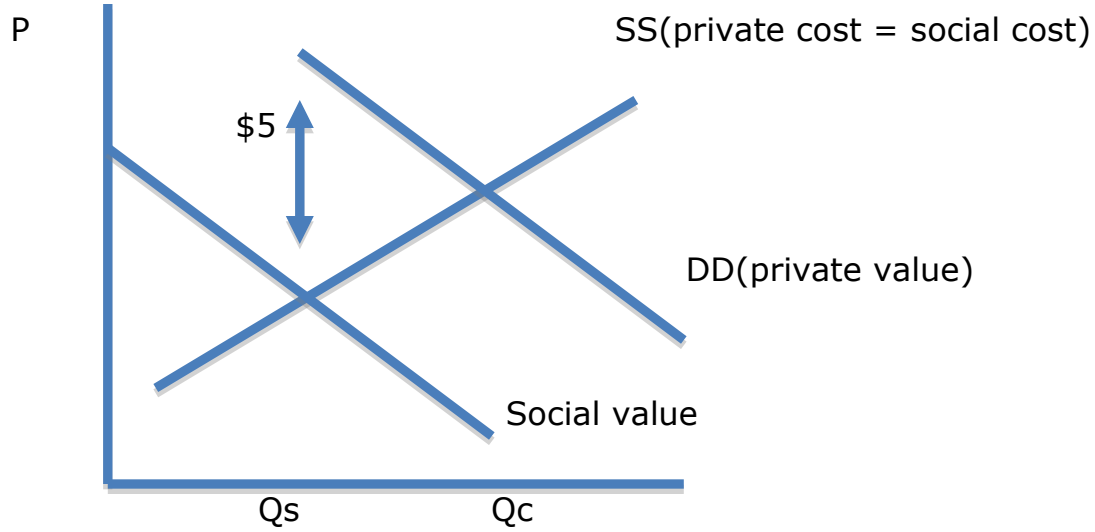
MC = Social MB

<u>Negative</u> consumption externality

Social value = private value - value of externality

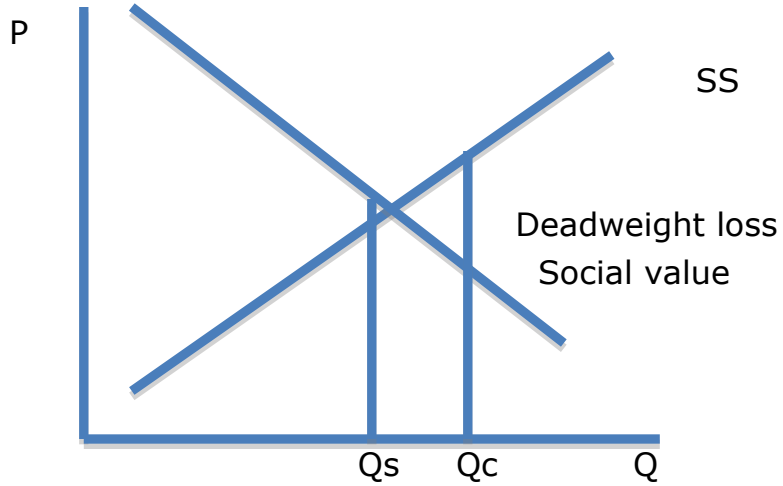
Market : Alcohol
Negative consumption externality: $5
Per bottle (impaired driving or similar costs)

1. Market "overproduces" alcohol (market will get it wrong)



At Qc social value < private cost(MC) (allocative inefficiency)
At Qs social value = private cost (MC) (allocatively efficient)

Welfare analysis: Negative Consumption Externality



To right of Qs social > private cost

2. Government Intervention

2.1. Impose tax of $5 per bottle, to be paid by buyer

Remember: Incidence of tax does not depend upon whether it is imposed on buyer or seller.

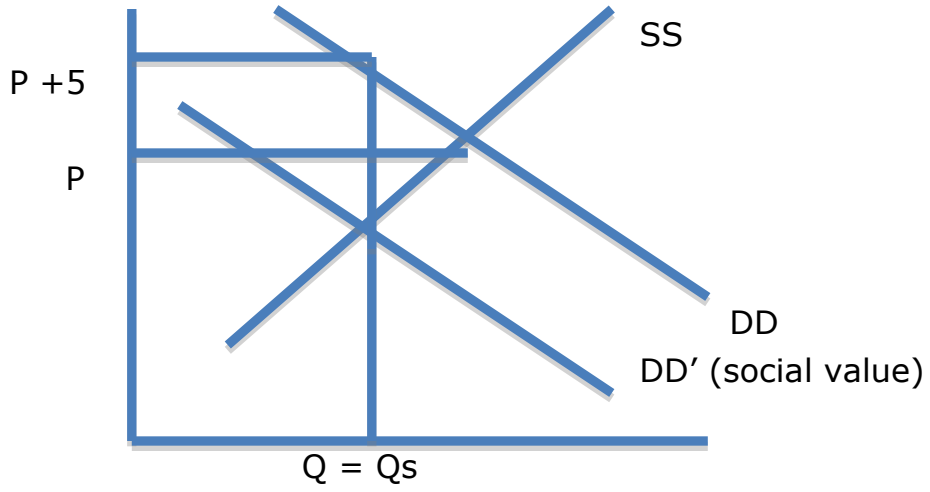
2.2. Student Exercise

(1) DD shifts to DD' (and equals social value)

(2) Q = Qs

(3) P (paid by buyer) rises

P(received by seller): falls



1. Q = Qs (allocatively efficient)
2. P (paid by buyer) = p +5 increases
   P (received by seller) = p decreases

Coase Theorem

If

1. property rights exists
2. transaction cost are low

Then:

Private markets, in presence of externalities, can arrive at allocative efficient outcomes

Further:
Result does not depend on who owns the property rights

Example #1
Farm A: cattle
Farm B: crops

Negative Externality: cattle stray and damage crops

Cost of Fence: $2 000
Damage to Crops: $ 3 000

Coase Theorem

(Property right: exclusive right to use resource)

Property right	Result	Way
Farm A(cattle can stray, with no damages payable)	Farm B builds fence	Cost of fence is less then crop damage
Farm B (owner of Farm B must be compensated for crop damage)	Farm A builds fence	Cost of fence is less then crop damage

Example # 2

Cost of fence is $ 5 000

Farm A	Farm B does Build fence	Cost of the fence exceeds crop damage
Farm B	Farm A does not build fence (pay 3 000 for crop damage)	Cost of fence exceeds crop damage

Key Result
Fence will be built if it is efficient to do so, Regardless of who has property right

(Economic well being is affected by who has property right)

Limitations of Coase Theorem

1. Transactions costs may be high (and bargaining may not take place)
2. Property rights may not be well defined

Example: one firm emits pollution into lake
Many cottages are negatively affected (high transaction costs)
Not clear whether firm has right to pollute or if cottages have right to clean lake.

Pollution Abatement: Economic Perspective

Question: Is Pollution Free Environment appropriate Goal of Policy ?

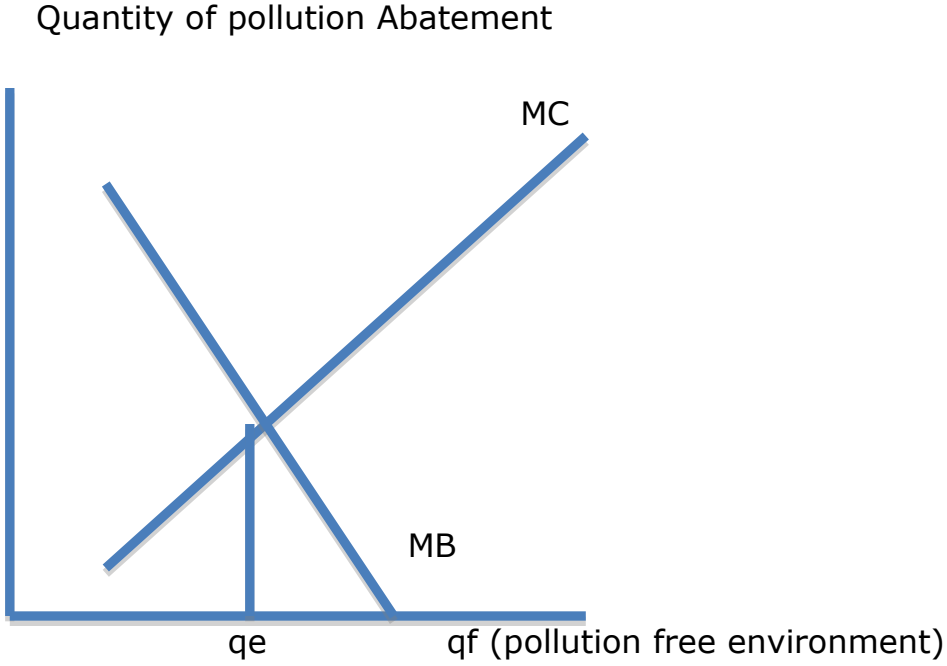
To reduce pollution (abatement)

- creates benefits
- imposes costs

Pollution abatement initiatives

High benefit taken first ➔ marginal benefit (MB) declines

Low cost taken first ➔ marginal cost (MC) increases



1. Pollution free ➔ invest in pollution abatement until
MB = 0 (at qf)

2. Economicly efficient investment in pollution abatement
at MC > MB ➔ inefficient
at MC = MB ➔ efficient

Wednesday, January 20, 2009

The Role of Government

Role of Market in a Market Economy

1. Improve Efficiency if "Market Failure"
1) Monopoly
2) Externalities
3) Public Goods

2. Alter Distribution of Income
Tax/Transfer programs

Public and Private Good.

1. Two Characteristics of Goods
Excludability : a person can be excluded from using a good
Rivalness: one person's use of good diminishes other person's use

Pure Private good (1) excludable
(3) rival

example: ice cream sundae

Pure public goods (1) non excludable
(3) non-rival

Example: national defense
Criminal justice system

Example: Lighthouse

Public good: non-excludable, non-rival

Value to each ship owner: $5000
Number of ship owners: 2000
Total value: $10 million
Cost: 1 million

Total value> Cost ➔ efficient to build

1. Private market
1) Entrepreneur requires $500 (1 million/2000) from each owner
2) Yet no owner will pay, since cannot excluded from benefit of lighthouse, once built

Free rider problem

2. Government

1) Builds lighthouse, charges $500 to each owner
2) Each owner enjoys surplus of $4500 (5k - 500)

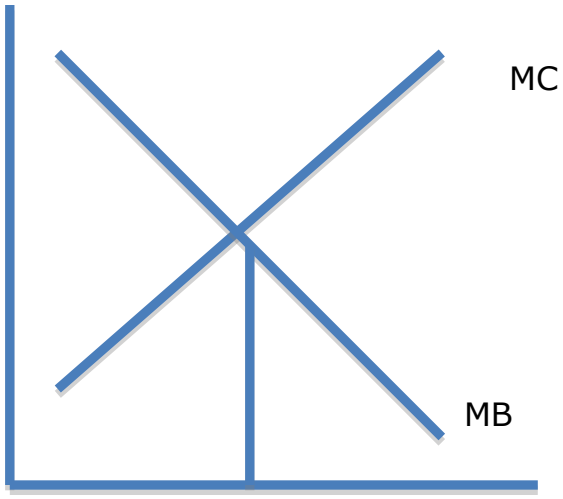
How to determine efficient amount of public good?

Marginal Benefit (all individuals) = marginal cost

MB of Public Good:

Vertical Sum of Individual MB Schedules

Efficient production of Public Good



At q<q*, MB > MC ➔ increase quantity of public good
Atq>q*, Mb< MC ➔ reduce quantity of public good

Police Officer

Public Good?
Answer: Yes

Non-excludable Non rival

True? False?

If a town hires no police officers, the social cost of crive is 200 00 per year/ If the town hires four police officers (at a salary 50 000) per year, there will be no crime. Therefore, the town should hire four police officers

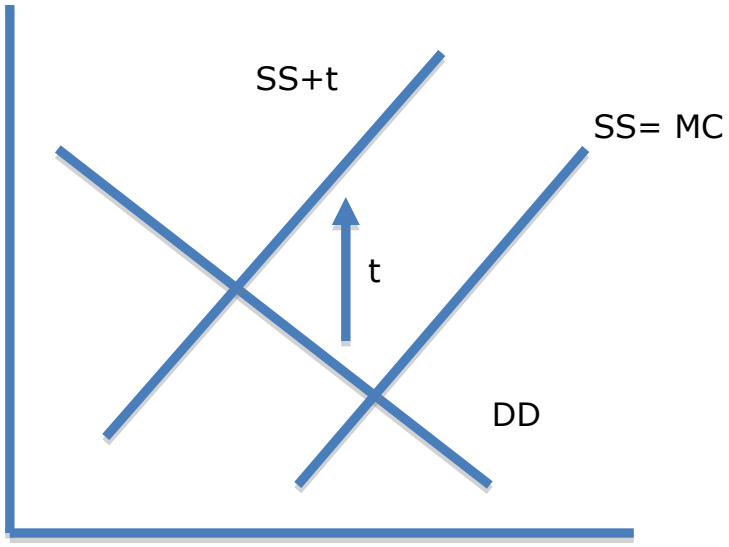
Answer:
Uncertain
Suppose that, of town has one police officer, that social cost of crime drops to $25 000

1* Officer MB = 175 000
MC = 50 000 =➔ hire 1* Officer
2* Officer MB < 25000
MC = 50000 ➔ not hire 2 officer

Taxes, which raise revenues for government, create "deadweight" or welfare loss

Input into governamtn policy:

(1) design of the tax system
(2) tradeoff between redistribution and economic efficiency



At q1 price(value to the buyer) > marginal cost ➔ not efficient
Intuition: market shrinks and gains from trade are not fully realized

Extreme Example: Excise Tax Eliminates Gains from Trade

1. Example: House painting

Painter and homewoner agree to wage of @25 per hor

1. Homeowner values at 30 ➔ cons surplus 5
2. Opportunity cost of painter is 20 per hour

➔ producer surplus is $5 per hour

3. Government imposes $12h per hour tax

If homeowner pay 30 (max), painter receives $18 => painter would not agree

If painter recives 20, homeowner pays 32 => homeowner would not agree

Result: House is not painted

Total loss of surplus is 10 per/h (5 cons,, 5 prod)

Monday, January 25, 2010

Macroeconomics

Real GDP (Measure of Overall Economic Activity)

Canada

2009 -2.5%
2010 2.9% (forecast)
2011 3.5% (forecast)

Question

Why the dramatic decline in 2009 ?
Why the growth forecast for 2010/2011?
Will unemployment rise or fall ?

Macroeconomics: Overview

Microeconomics focus on individual firms, households
Macroeconomics focus on entire economy

Issue:

1. Short-run fluctuations in output and employment
2. Inflation
3. Economic growth

How do economists measure "output" ?

GDP (Gross Domestic product)

Measure of output and of income earned to produce output

Insight
1. Total expenditures on output = total incomes earned to produce output

2. Measure using: Expenditure approach or
Factor Incomes Approach

Gross Domestic Product (GDP)

1. GDP: the market value of all final goods and services produced within a country in a given period of time, usually a year.
2. Total expenditures = total income earned

2.1. Example: John pays Joan $50 to mow his lawn
Expenditures (by John) = $50
Income earned (by Joan) = $50

2.2. Implication: GDP can be measured either by adding incomes or expenditures.

Text, Chapter 19,20

Imports IM (text)
M (lecture)

GDP: Expenditure Approach ON THE WEB

Exclusions:

1. Expenditures on intermediate goods, to avoid double counting
Example: Men's suit, a final good, is included. Wool used in suit, as intermediate good, is not included.

2. Expenditures used on used (previously produced) goods, which contributed to GDP in previous year
Example: Expenditure on Chevy produced in 1998 is included in GDP for 1998

3. Transfer payments by government (social insurance payment, unemployment insurance benefits), since are not expenditures for goods and services

One more slide is on the web!!!!!

Observation:

1. Because of indirect sales consumers pay more then producers receive, so we have to make an adjustment for indirect taxes or subsidies.
2. On the web

Ex
John pays Joan $50 to mow lawn, plus GST at 7%
Note: GST in indirect tax

Expenditure is $53.50
Income is $50

For two approaches to yield the same result, must add Income Tax to factor incomes (income earned)

Real versus Nominal GDP

Nominal GDP : uses current prices to value economy's production of goods and services
Real GDP: uses constant base-year prices to value the economy's production of goods and services

1. Nominal GDP can rise due to:
Higher output
Higher prices

2. Real GDP rises only if output increases

One more example is on the WEB!!!!!!!

Real versus GDP : Example Hot Dogs Hamburgers ^^

GDP deflator = Nominal GDP / real GDP *100

Wednesday, January 27, 2010

GDP

Measure of output and of incomes earned to produce output

Real GDP: current prices
Nominal GDP: constant base-year prices

GDP deflator = (nominal GDP/Real GDP) * 100

Determine Real GDP (using GDP deflator)

%delta Nominal GDP = %delta RealGDP + %delta GDP deflator
[market value of output [real output] [price]
in current prices]

Percentage Change IN

Nominal GDP	GDP deflator	Real GDP
10	8	x ? (2)
6	-2	8

Contribution of a firm to GDP

1. Value added: value of a firm's production minus the value of intermediate goods purchased from other firms.
2. Example:
Price of suit: $ 200
Price of wool: $(50)
Cost of buttons: $(5)

Value added of tailor: $145

3. Result:

1.)Each firm contribution to GDP is its value added

2.)GDP = sum of value added by each firm

3) GDP is not a sum of output of each firm (since would "double count" intermediate goods).

Per Capita GDP (GDP/population)

1. Standard measure of "economic well - being"
2. Countries with high per capita GDP can afford better

-Education

-Health Care

-Environmental protection

3. Limitation

- distribution of income
- Ignores household production (only market activities included)
- Ignores quality of the environment
- Ignores leisure time
- Ignores underground economy

Consumer Price Index (CPI)

Measures the cost of a basket of goods and services to the cost of the same basket in the base year

Note: CPI measures prices of consumed goods and services (include imports)

GDP deflator measures prices of goods and services produces

How to Calculate CPI ?

Step 1: Survey consumers to determine a fixed basket of goods

4 hot dogs, 2 hamburgers

Step 2: Find the prices of each good in each year

Step 3: Compute cost of basket of goods in each year

Step 4: Choose one year as a base year and compute CPI in each year

Step 5: Use CPI to compute inflation rate from previous year

Question

If individual earn 30 000 in 2000 what is the equivalent salary purchasing power on 2008 ?

<u>Sources of Bias in CPI</u>

1. Substitution effect
   As certain goods become relatively cheaper, families will consume less of goods that become more expensive and the opposite for cheaper goods.

   Yet CPI is based on fixed basket of goods (until index is revised)

2. Quality Improvement

   Difficult to measure

3. New Goods
   How to compare CDs to LPs ?

   CDs not incorporated into index until fixed basket is revised (so until declines in price is missed)

Monday, February 1, 2010

Simple Model:

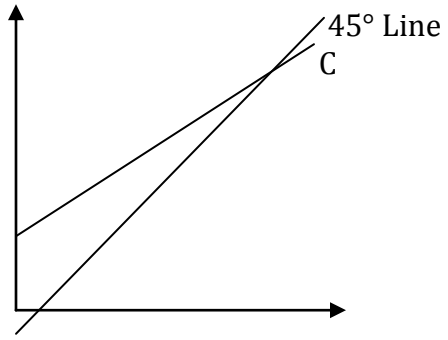
AE = C + I

C = planned (desired) consumption by households
I = planned (desired) investment by firms
(Price level is fixed)
GDP Measures:
National Output
National Income
Question
How is national income determined?

Answer
Where desired spending – called Aggregate Expenditure (AE) – equals national income (output)
CONSUMPTION
Household's consumption (C) depends upon income (Y)
Savings (S) = Income Not Consumed
Key Concepts
Marginal propensity to consume (mpc) = $\Delta C \div \Delta Y$
Marginal propensity to save (mps) = $\Delta S \div \Delta Y$
mpc + mps = 1
INVESTMENT
Firms undertake investment (I) in anticipation of earning a profit.
Will treat I as fixed (I = 25 in First Example)
Example: Consumption Function

Y (Income)	C (Consumption)	S(Y-C)	ΔC/ΔY	ΔS/ΔY
0	10	-10	---------	--------
100	100	0	0.9	0.1
200	190	10	0.9	0.1
300	280	20	0.9	0.1

C = 10 + 0.9Y mpc = 0.9
S = Y-C = + 0.9Y) = (-10 + 0.1Y)



Autonomous Consumption

If there is no change in Y, but C changes, result is change in autonomous consumption.

$C = 10 + 0.9Y$ vs $C^1 = 20 + 0.9Y$

Autonomous consumption has increased by 10

Consumption function shifts up by 10

Change in Autonomous consumption is change not due to change in income.

Sources: Change in wealth
Change in interest rates
Change in expectations about future

Change in Autonomous consumption => shift in consumption function

U.S. 2009

Deep Recession

Why?

Consumption (68% of GDP in U.S.) fell sharply

Why?

Large decline in household wealth (housing) → Downward shift in consumption function

Firms' Investment

New plant and equipment

Residential construction

Inventories

Insight

Undesired (unplanned) fluctuations in inventory investment cause firms to change production.

Undesired inventory investment (actual sales < planned sales) → reduce production.

Undesired inventory disinvestments (actual sales > planned sales) → expand production.

Firm Produces/ Sells Shirts

Desired Inventory: 5,000 shirts

Current Production: 10,000 shirts (per month)

Sale (Month)	Change in Inventory	Production
10,000	0	No Change
12,000	- 2000*	Increase

6,000 + 4000** Reduce

* unintended inventory disinvestment

** unintended inventory investment

Example assumes that desired inventory is unchanged

National Income (Output) Determination

Y	C	I	AE (C+I)	National Income
250	235	25	260	Expands
300	280	25	305	Expands
350	325	25	350	Equilibrium
400	370	25	395	Contracts
450	415	25	440	Contracts

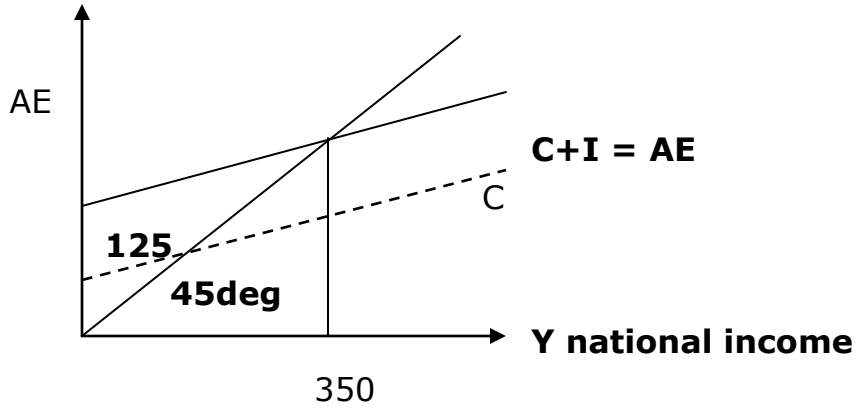
Involuntary inventory investment. Output and Income are the same.

AE > Output → inventories involuntarily decline, firms increase production.

AE < Output → inventories involuntarily rise, firms reduce production.

AE = Output → inventories are at desired levels (so firms have no incentive to change production)

NATIONAL INCOME (OUTPUT) DETERMINATION



Wednesday, February 3, 2010

Aggregate demand and the multiplier

1. Simple model

AE = C + I , AE = desired spending

2 Equilibrium

C+ I = Y

Desired spending = Output

National income = national output

3. If not equilibrium

unintended inventory investment or disinvestment

Model as before

C = 10 + 0.9Y

I = 25

Question:

If firms increase investment (I)

From 25 to 35

Will Y increase by more then 10 ?

Exactly 10 ?

Less then 10?

The multiplier

Y	C	I	AE(C + I)	National income
350	325	35	360	Expands
400	370	35	405	Expands
450	415	35	450	Equilibrium

Note: I increased by 10 (ie increase from 25 to 35)

Change in Y (ie increased by multiplied amount)

C = 10 +0.9Y

I = 25 ➔ C +I = 35 +0.9Y = AE
I = 35 ➔ C +I' = 45 +.9Y = AE'

Autonomous Expenditure ➔ Varies independent of Y

Induced Expenditure ➔ Varies due to change in Y

Change in Autonomous Expenditure

Shift in AE scheduale

New intercept of AE schedule

Remember expenditure = income

The multiplier concept

1. change in Y = multiplier + change in Autonomous Expenditure

Example: change Autonomous Expenditure = change in I = 10

2.Induced consumption expenditure is key

Round #1 change in I =10 ➔ change in Y = 10

Round #2 change in C + change in Y =0.9 *10 =9 ➔ change in Y is 9

Round #3 ➔ change in Y is 8.1

Etc

Change in Y = 100

Round 1 change in Autonomous expenditure

Induced consumption expenditure

The multiplier: Value

1. Slope of AE Schedule

AE = C + I = 10 + .9Y +25 = 35 + .9Y

Slope = .9

2. Multiplier = 1/1- slope of AE Schedule

= 1/1-.9
= 10

observation: In this model slope of AE Schedule is mpc, so Multiplier is 1/1-mps

Exercises

If autonomous consumption falls by 5, what is the new consumption function ?

C = 5 + .9Y

Instead of (10 + .9Y)

What is change in Y?

Change in Y = multiplier * change Autonomous Expenditure

= 10*(-5)

=-50

3. Why does Y fall ?

At initial level of income, desired spending is less then income (output) ➔ Involuntarily inventory investment ➔ Firms reduce production

Monday, February 8, 2010

1. Simple Model
2. Extended model

C +I = Desired Aggregate Expenditure = AE

Why desired ?

Actual C = Desired C

And

Actual 1 > desired I, if unintended inventory investment

< desired I if unintended inventory investment

Investment:
1. new plant and equipment
2. residential investment
3. inventory investment

Canada

2009 Recession (real GDP fell 2.5%)
2010 Recovery
2010 consumption growing
but
Exports remain weak(especially to US)

Need to extend model

Extended model

AE = C + I + G +X - M

Government Sector

G = Government expenditure
T = Taxes

(Note: T affects AE, indirectly by influencing C) !!!!!!!

Foreign Sector

X = Exports
M = Imports

Government Spending and Taxes

1. Spending

G = G(bar) political determinants

2. Taxes
2.1. T = t * Y where t = marginal tax rate

T = .2Y numercal example

2.2. YD (Disposable Income) = Y – T

C = C0 + C1*YD, where C1 is MPC
= C0 + C1*(Y-T)

Consumption and National Income

C = 10 + .9*YD Note: YD

T = 0.2Y
Thus: C = 10 + .9(Y-T)
= 10+ .9(Y – 0.2Y)
= 10 + .72Y

MPC out of national income is 0.72

Exports and Imports

1. X = X(bar)

Depend upon:
1. foreign national income
2. foreign versus domestic prices
3. exchange rate

2 Imports

Depend upon:
1. national income
2. foreign versus domestic prices
3. exchange rate

M = .1Y

The Extended Model: AE = C + I + G + X – M

C = 10 + .9Y
T = .2Y ➔ C = 10 + .72Y
I = 25
G = 17
X = 24 ➔ X-M = NX= 24 -.1Y
M = .1Y

What would be an equilibrium level?

Equilibrium Y is 200

1. Numeric (Trial and error)
2. Algebra

Table is on the Website !!!!!

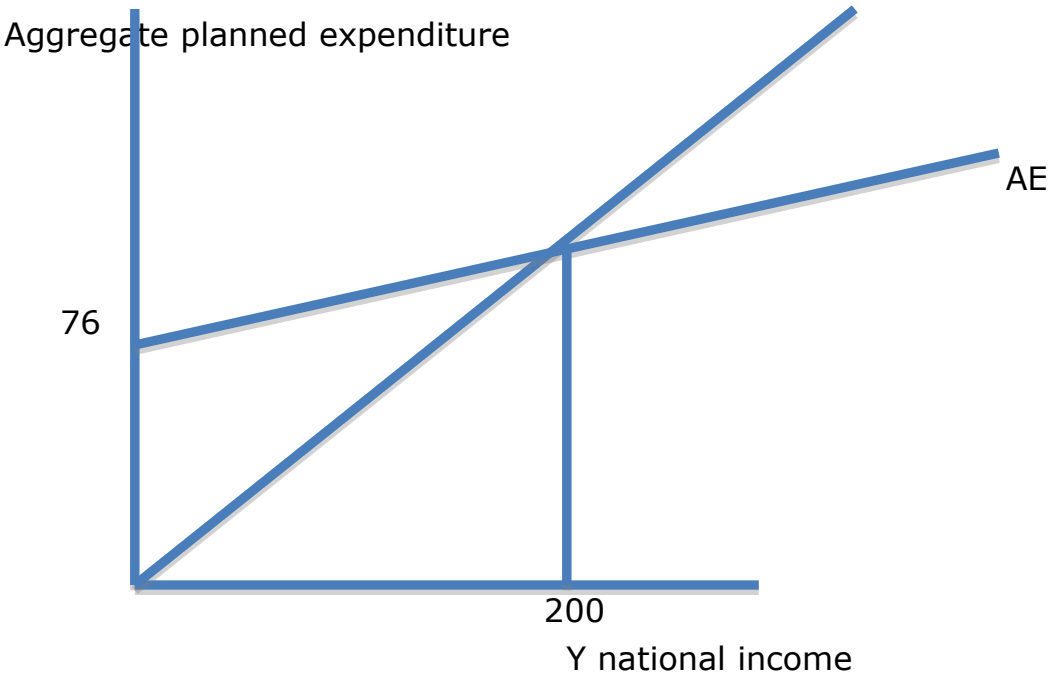
Algebra

1. Derive AE schedule

C + I + G + X = 10 + .72Y + 25 + 17 + 24 - .1Y
= 76 +.62Y

3. Set AE = Y (equilibrium condition) able to explain

76 + .62Y = Y
Y = 200



The multiplier ?

Delta I = 10 ➔ delta Y = 26.3 Try by myself

Multiplier = 1/ 1-slope of AE Schedule

Slope of AE Schedule

Slope = 0.62 = Multiplier = 1 /1-0.62 = 2.63

Simple Model C + I = AE Multiplier = 10

Extended Model C + I + G +X –M Multiplier = 2.63

Why the difference ?
Explain in words, why is it ?

1. Technical answer : slope of AE schedule is different
2. Intuitive answer : at each round, induced expenditure is smaller in extended model! **BUT WHY ???**

Why is multiplier smaller ?
Round 1: deltaI = 10 ➔ delta Y = 10

Induced Expenditure

Round 2: delta YD = delta Y – delta T
DeltaT = 0.2deltaY = 2
Therefore, delta YD = 10-2 =8

Delta C = mpc*deltaYD
=0.9*8
=7.2

deltaM = 0.1 * deltaY
=1

deltaC – deltaM = 7.2-1 ➔ delta Y = 6.2

Round3 Exercise

Insight : Multiplier is smaller because:
1. taxes increase, reducing income available for consumption
2. imports increase, reducing expenditure on domestic goods

Wednesday, February 10, 2010

National Income and Price Level (Part two)

Simplifying Assumptions

Price level is fixed
Interest rate is fixed

Result:

1. Equilibrium level of national income (Y) occurs when aggregate planned expenditure (AE) equals output

   Key: involuntary inventory investment by firm

2. delta Y = multiplier * delta Autonomous Expenditure

Key: induced expenditure

Application

Suppose:
delta C (autonomous) does down by 5
Delta X goes down by 15
Delta T (autonomous) goes down by 20
Mpc (out of YD) = 0.8
Multiplier = 2

Question : What happens to equilibrium Y ?

Down by 8

Delta Autonomous Expenditure = delta C + delta X + mpc * deltaYD
= - 5 -15-0.8(20)
= - 20-16
= -4

deltaY = multiplier * Delta Autonomous Expenditure
= -4 *2

United States:

Delta C goes down

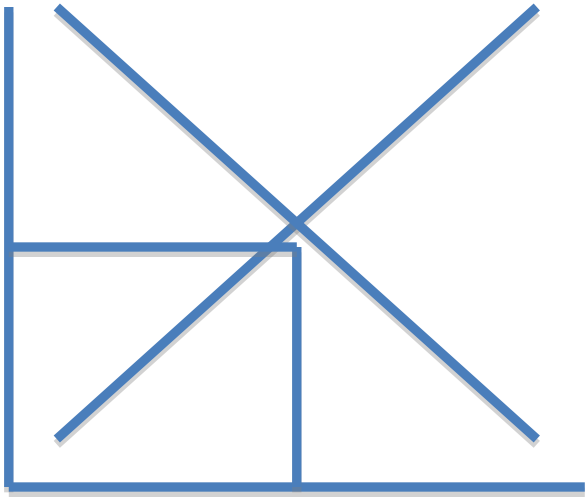
Autonomous
1. Credit deficit to obtain
    2. Stock market wealth goes down
    3. Household market goes down

➔ AE drops
➔ Y drops

Fiscal Policy (to offset, in part)

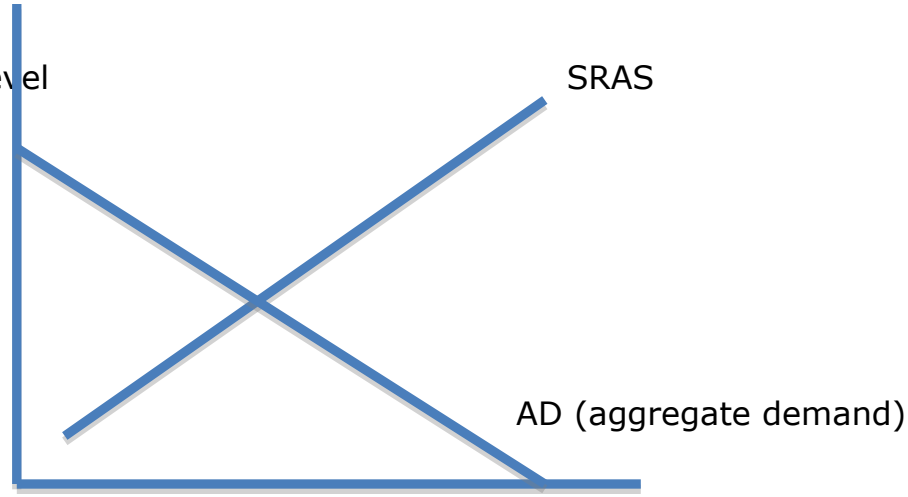
Delta G was increased ➔ AE goes up
Delta T drops ➔ delta YD up ➔ deltaC up ➔ AE up

Microeconomics
Perfect Competition



Question: 1. How are equilibrium price and quantity determined ?
    2 what causes DD or SS to shift ?
    3. if dd or ss shifts what happens ?

Macroeconomics



Questions: SAME

Lectures Text

SRAS AS
LRAS Potential Output

AE Schedule: Price level is fixed

Price level does vary

Introduce: Aggregate Demand AD curve

AD = C + I + G + (X - M) (total of desired spending = AD as well)

Price level (P) goes up -> AD goes down

Motivation (Introductory)

1. P up -> wealth down -> C goes down

Households holding some sum of money (cash, bank deposits) decline in real terms as price level rises, making households less wealthy

2. Price up ➔ X goes down , M goes up

For a given exchange rate X becomes more expensive and M becomes less expensive for domestic buyers

Household Wealth and Consumption

1. Wealth (as well as disposable income) influences consumption
2. Houshold has $10 000 in cash
3. Price level goes up by 10%
4. Purchasing power of 10 000 cash declines to 9 000
5. Households reduces consumption (change in autonomous consumption)

Deriving the AD curve

1. AE Schedule (drawn fro a fixed price level)
2. AE schedule shifts down as Price level goes up

Po : Co + I + G + Xo – Mo = Yo (sensitive to that change with o)

P1>Po: C1 + I + G + X1 – M1 = Y1

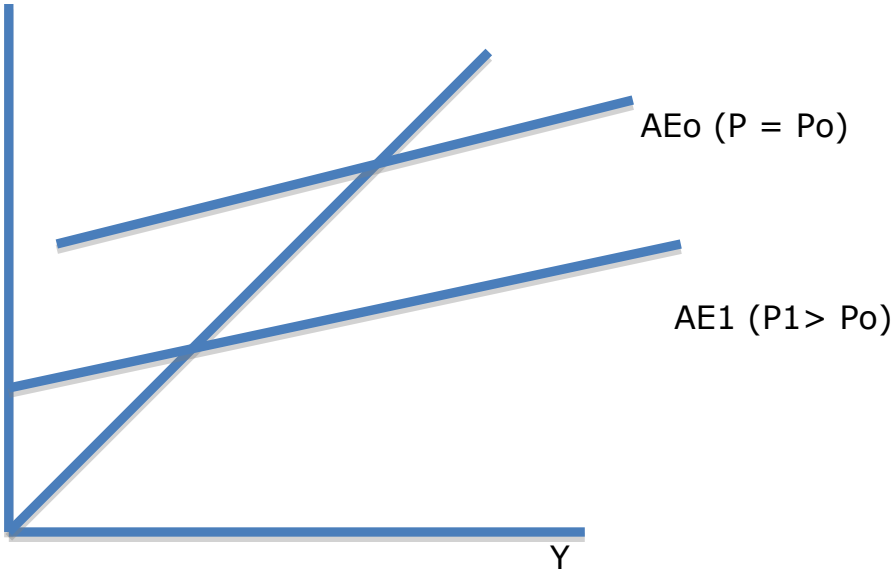
C1<Co X1< Xo M1>Mo

Y1-Yo = multiplier* (deltaC + delta X - deltaM)

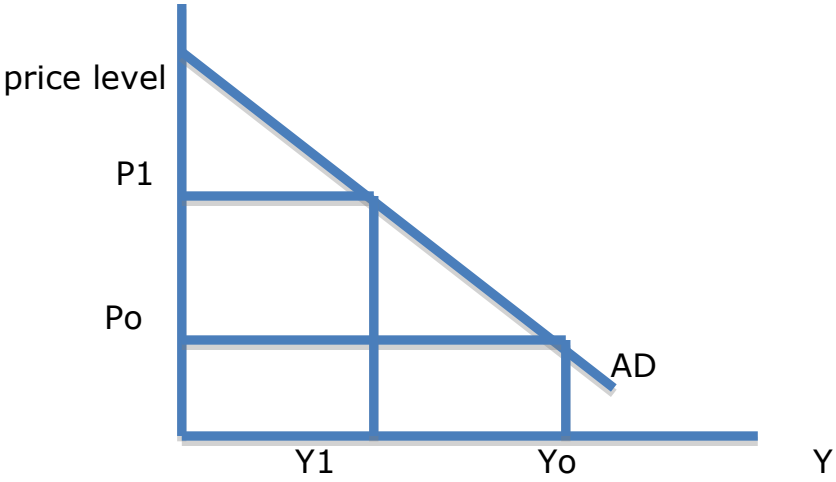
Thus

P1>Po ➔ Y1<Yo

Aggregate Expenditure



Aggregate Demand



Monday, February 22, 2010

Introduction to National Income Determination: Price level is Fixed

Simple Model:
Households: C
Firms: I

Aggregate Expenditure (AE) = C + I

Extended model:

Add
Government expenditure: G
Taxes: T
Exports: X
Imports: M

AE: C+ I + G + (X-M)

Results:

1. Equilibrium national income Y

AE = Y

Desired spending = output

Insight: role of unplanned (involuntary) inventory investment

2. Multiplier

Insight:

autonomous vs. induced expenditures

Omission :
Supply side of economy

AD schedule

Shows how desired aggregate expenditures change as the price level changes

AS Schedule:

Shows how in the <u>short run</u> the supply of output by firms changes as the price level changes

Price level (P) rises **implies** AD falls

Motivation:

1. P goes up, C falls
   Housholds of money decline in real terms as price level rises, making housholds less wealthy, so consumption falls

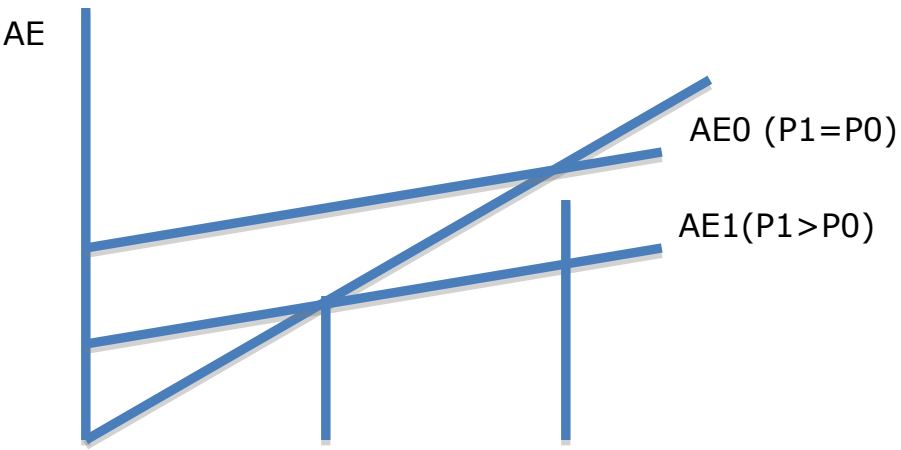
2. P increases ➔ X falls and M rises

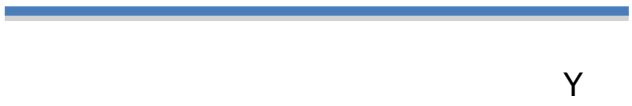
P1>P0 ➔

Example:

P0	**P1**
C = 100 + 0.9Yd	C= 75 + 0.9Yd
X=20	X=18
M=25	M =28

Aggregate Expenditure (AE)

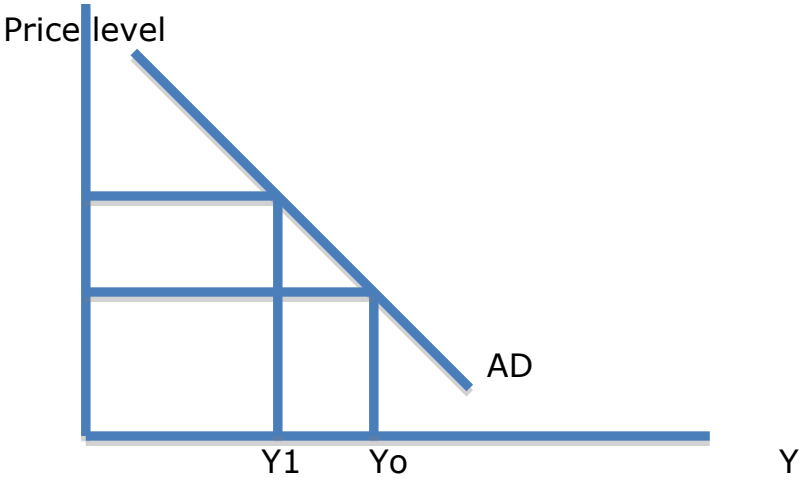




Y

If the price level goes up AE will shift downwards and equilibrium level of output drops

Aggregate Demand (AD)



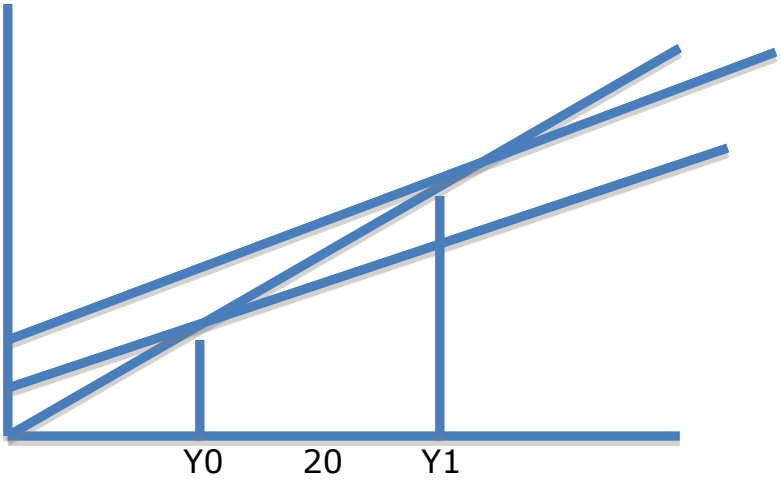
AD curve

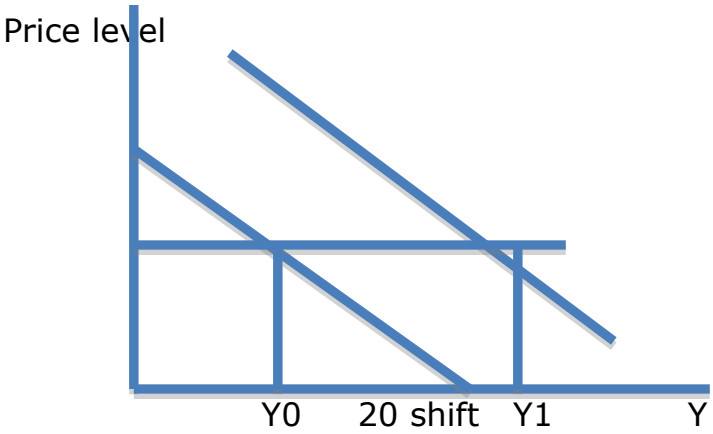
1. P up ➔ AD down (movement along AD curve)
2. For P= P0, AD identifies level of real GDP where AE = output

Question: How does AD curve shift ?

Example:
deltaI = 10
multiplier = 2

Y1-Y0 = shift in AD curve
= 2*10 = 20

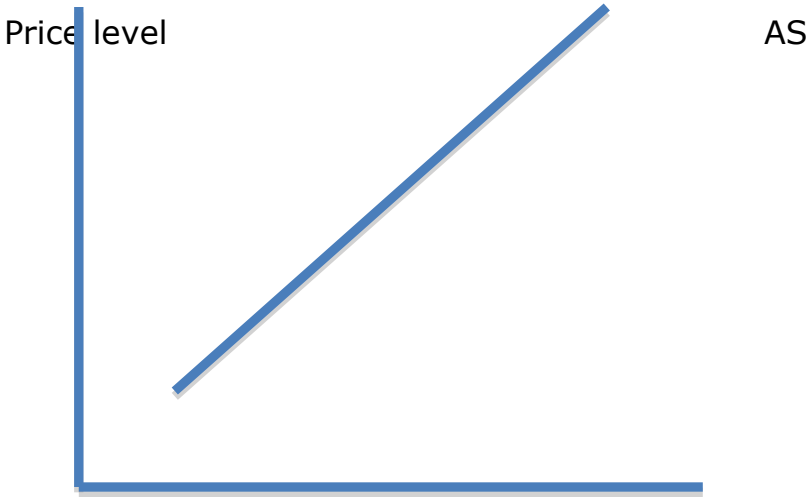




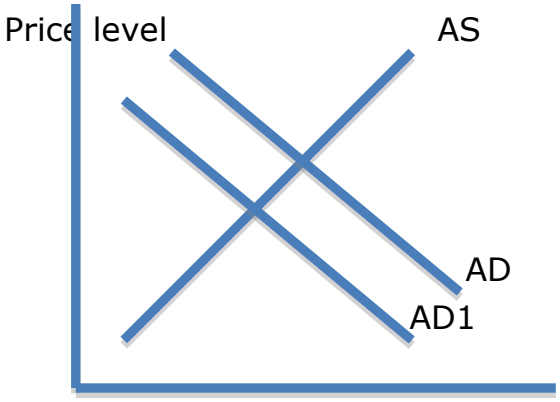
Aggregate Supply (AS)

1. AS: relationship between real GDP (firms' desired production) and price level when prices of factors of production (includion wage)are constant
2. Price level P up = AS up

Intuition:
Price goes up ➔ Firms gonna have higher profits (since wage and prices of other factors do not change) ➔ firms' desired production increases



2009 Recession
United States



AD shifts to AD1

GDP fell by 2.5%

Unemployment rate from 5% goes up to 10%

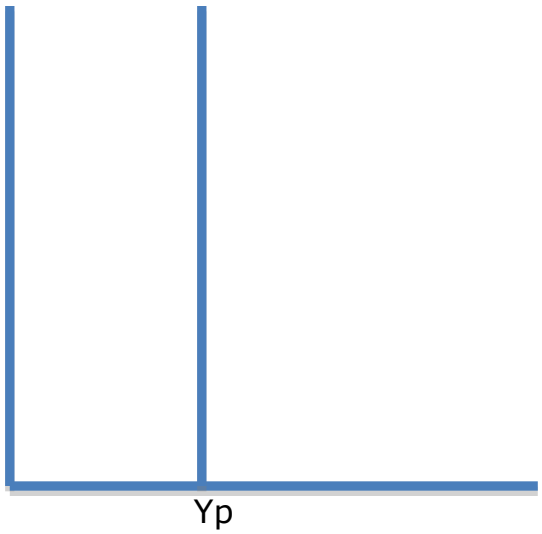
AS Intuition

1. Firm that manufactures shirts
2. Signs contract which

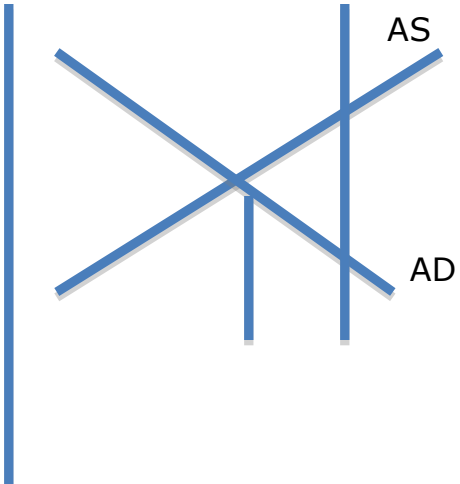
- Fix wage for one year
- Fix price of cloth for one year

3. If price level rises, firm's profits increase, since
- price of shirts increase
- price of factors of production is unchanged
4. Firms respond by increasing production

Potential GDP is total output when factors of production are utilized at normal rates



Yp – potential output (Full employment)

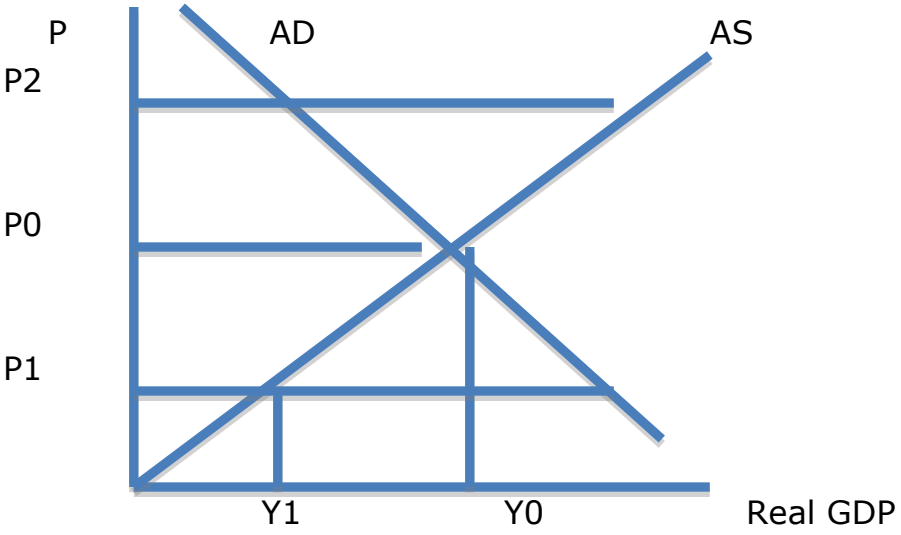


Wednesday, February 24,2010

Macroeconomics Equilibrium

SR Macroeconomics Equilibrium
AD=AS

Desired spending (AD) = AS



Equilibrium

At P = P0, AD=AS ➔ aggregate desired spending = firms' desired output

If we are at P1:

1. Firms' desired output is Y1
2. Total desired spending [AD] exceeds Y1

Economics adjustment:

1. Firms' inventories are being(involuntarily) drawn down
2. Firms respond by increasing output and prices

[Note: when prices are assumed to be fixed, firms respond by increasing output]

Result:

P1 increases to P0
Y1 increases to Y0

Remember:
Price level goes up ➔ move along AD and AS

1. AD down (C down, X down, M up)
2. Supply of output UP (price of output UP while prices of factors of production unchanged)

Recession in the US

Autonomous Consumption went down

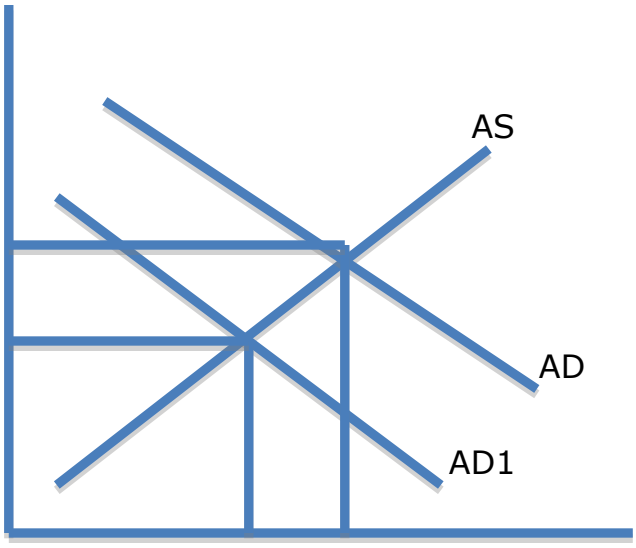
➔ Saving goes up

Personal Saving Rate (1-C/Yd)

2007	0%
2008	1.7%
2008(dec)	3.6%

Implication
Imports to US down ➔ Exports from Canada down

Insight: Demand for Canada's exports will fall



P fall
Y fall

AD – AS Model

Exports: +10 million
Multiplier = 2.5

Will Y increase by 25 million?

Result: AD shifts by 25 million

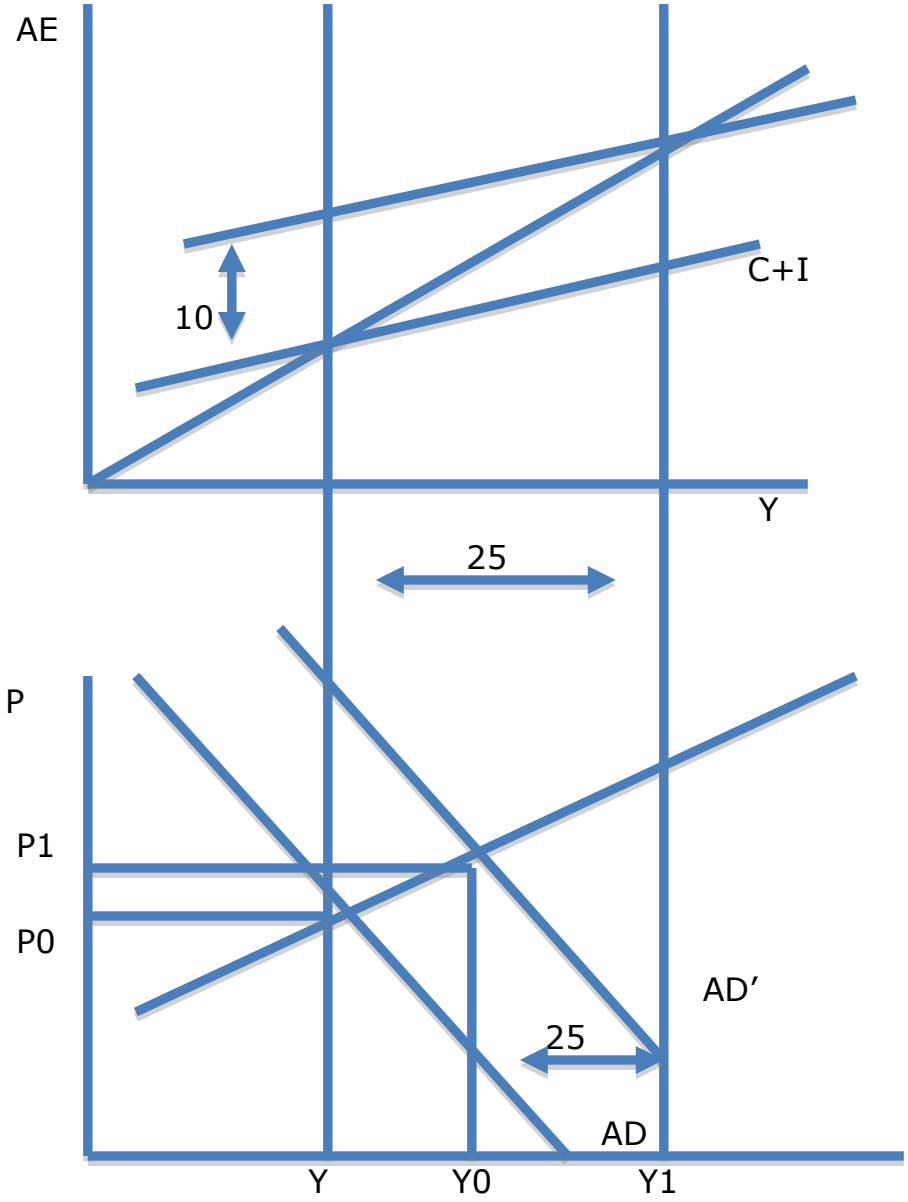
But Y will increase by less then 25 million since price level increases and lowers AD

REMEMBER:

As price level rises AD falls due to :

Consumption down (wealth falls)

Exports down (more expensive)
Imports up (less expensive)



If the price level wuldnt change then Y would change by 25

Shifts in Aggregate Supply:		Potential output:
Supply Shock	AS	Shifts right
Increase in productivity	Shift right	(potential GDP rises)

Due to technological advance		
Wage increase	Shift left* Due to reduces profit	No cahnge (real profits unchanged, potential Gdp unchanged)

* Given price level that firms can sell that output, desired output falls

Example: Difference between AS ans Potential GDP

AS

1. Firm uses workers, steel to produce widgets
2. Firms plan to supply 1000 widgets, to be sold for 25 each after signs contracet that firm

- wage rate, for next 12 month at 25
- price of steel, for next 12 month, at $500 per tonn

3. Price level rises by 10%, so perfectly competitive firm can sell now @ 22
4. Firms increse production to 1200 widgets

Result: AS is positively slopped

Potential GDP

1. Next year, wage and price of steel increase by 10%
2. Firms plans to supply 1000 widgets (as price of output and price of all inputs have not increased by 10%)

Result: Potential GDP doesn not vary with price level

Monday, March 01, 2010

Short – Run Macroeconomics

Equilibrium in the short run is determined by the intersection of AS and AD
Aggregate desired spending = Firm's desired output

What determines macroecquilibrium in a long run

AD = Potential GDP (Yp)

Potential level of output

Factors utilized at normal rate

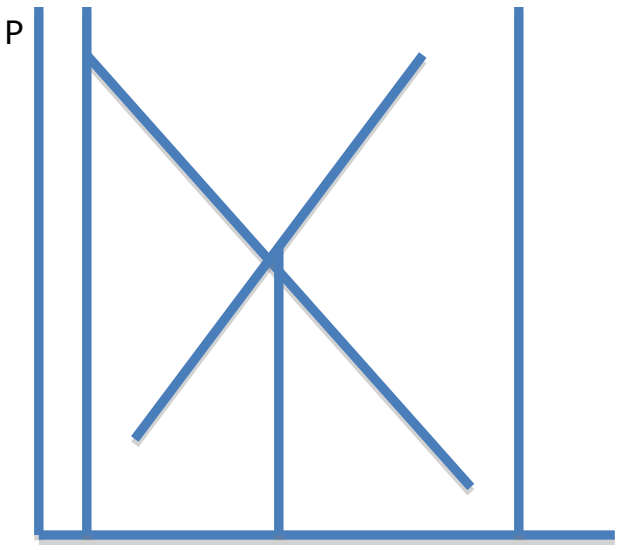
Intuition : Normal work week is 40 h

Average individual works 40h per week: Y = Yp

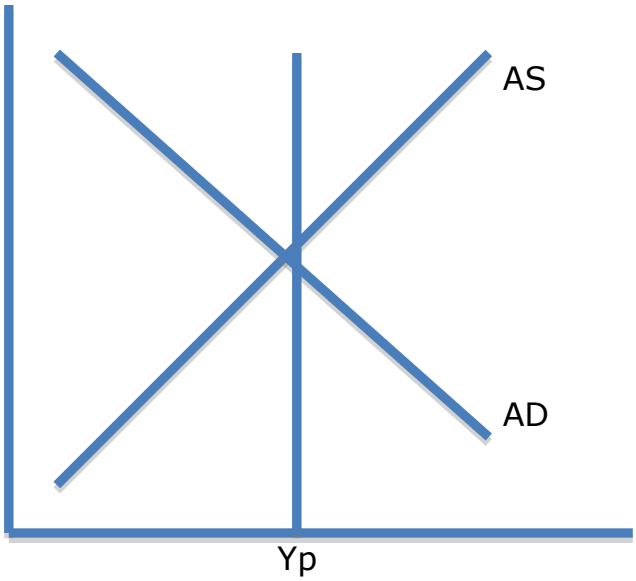
Less then: Y< Yp

More then: Y > Yp

Yp: AS prices are flexible (including factor prices)



Yp is unaffected by the price level in a long run

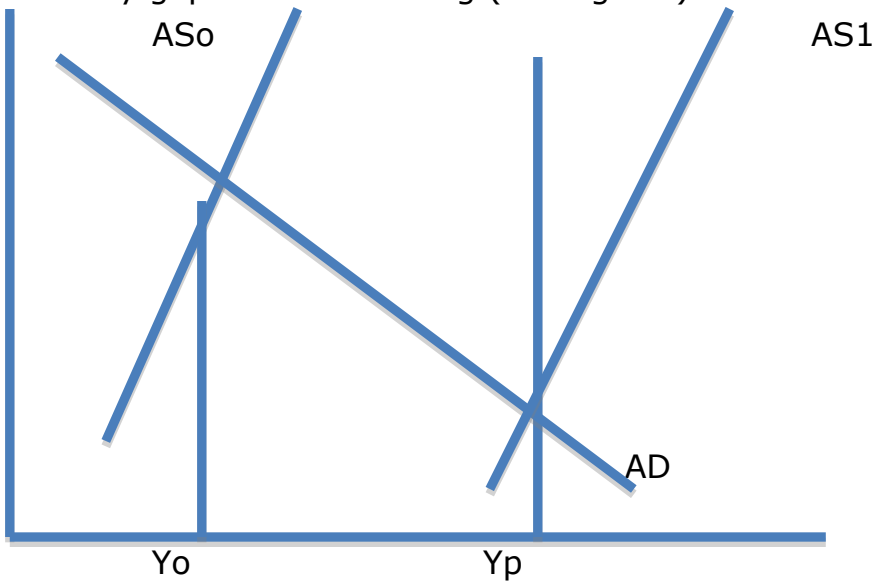


Long run

AD = AS determines Y,

Y=Yp

Recessionary gap : self-correcting (in long run)



1. Yp > Yo – Recessionary gap
2. Real GDP < Potential GDP ➔

   Unemployment goes up (is high) (w1<w0)
   Wage rate goes down (eventually) excess supply of labour

3. Wage rate falls ➔ AS 0 shifts to AS1
   As costs of production fall, firms expand output

   4. Long – run Equilibrium occurs at Yp

Y< Yp

What will happened, in long run, to:
1. the wage rate? Falls (due to unemployment)
2. The price level? Falls (AS shifts right)
3. Aggregate Demand increases (as price level falls)
4. Real GDP Increases (to Yp)

Short Run

AD and AS determine Real GDP
Time frame: say one year (price level is fixed only short run)

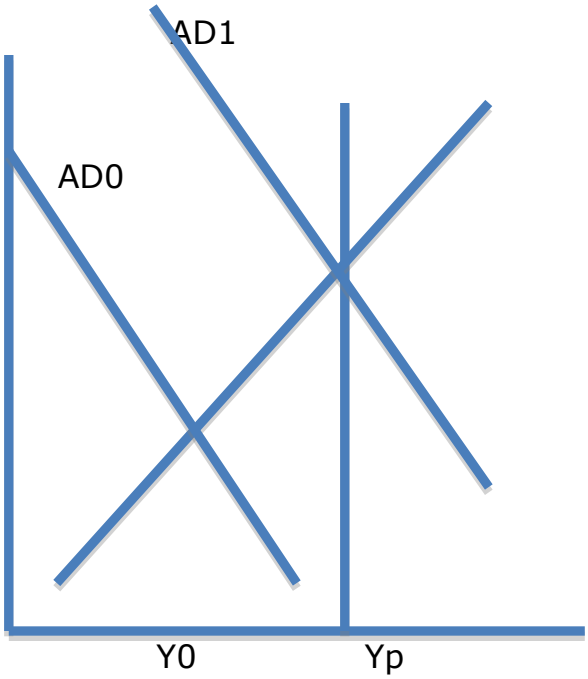
Remember: factor prices are assumed to be a constant

Long run:
Real GDP = Potential GDP (Yp)
Time frame: several years or more

Canada, March 2010
Output gap (Recessionary GAP): 3.25%
Forecast Return to Potential Output: September 2011

Should federal government:

a. Allow self-correcting forces to (slowly) return the economy to full employment ?
b. Use expansionary fiscal policy – higher G and /or lower T to shift AS curve to the right and thus expand real GDP?



Difficulties with Fiscal Policy
Example Canada, January 2009

1. Federal Government grants 75% of cost for the new athletic center, if local town government will pay 25%

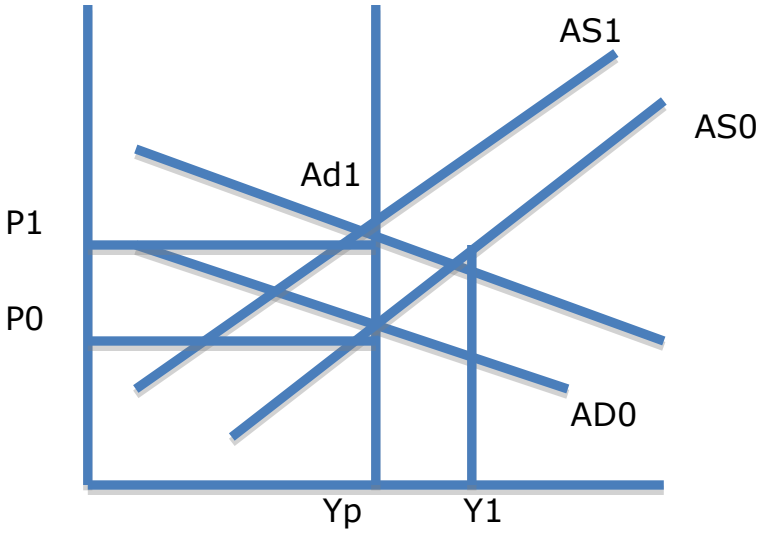
Comment:
Allocatively inefficient
MB (town residents) = 0.25MC

It tends to lead to the decisions which not lead to pass the MC= MB test

2. Federal Government requires that construction begin by March 2011
Concern:

1. Lags in impact of fiscal policy
2. By March 2011, Canada will be at/ or much closer to potential output

Wednesday, March 03, 2010



1. AD – AS intersection always determines equilibrium
AS0 AD0 intersection also occurs at Yp

2. AS0 ➔AD1 => P>Po and Y1>Yp (Inflationary Gap)
Along ASo firms increase output as price raises (and wage remain uncahged)

3. In the long run wages will also rise, thereby shifting ASo to the left to AS1

4. Long run Equilibrium is established when Y=Yp and P=P1

REVIEW:

Balanced Budget Multiplier

Q: If G and T change by the same amount, will AE schedule
-Shift up?
-Shift down?
-be unchanged ?

Step one:
Identify change in Autonomous Expenditure
(**Expenditures not related to Income**)

Step two:
G up by 100 ➔ Aut Exp went up by 100
Change in T ➔ autonomous Expenditure = -mpc*100
(Note change in C = mpc *change(Y-T)
= mpc* (-deltaT) if change in Y = 0
=-mpc*100
)

change in autonomous Expenditure = change in G + change in C
= 100 – 100*(mpc)

multiplier = 1/1-slope of AE schedule

= 1 / 1 – (mpc(1-t)-m)

= 1 / 1-mpc
ONLY if
t Marginal propensity to tax is =0
m marginal propensity to import = 0

Multiplier will change only if there is a change in mpc, t or m.

Monday, March 08, 2010

Money, banking, monetary policy

Bank of Canada lowers key interest rate from 1% to 0.5%

1. Why ?

"The outlook for the global economy has continued to deteriorate .. the nature of the US recession is particularly challenging for Canada "

2. Purpose

To increase AD, to reduce spillovers from recession in U.S.

3. How? Transmission mechanism

Banking system

1. Central Bank (Bank of Canada)
   Uses control of the money supply and interest rates to influence Aggregate Demand

2. Commercial Bank
   Create money as by-product of profit-seeking activities

Money

(Canada: Currency + Bank deposits)

1. Purpose

Medium of Exchange
Store of value
Unit of account

2. Alternative to money: barter

(very inefficient)

How do banks create money?

Simplifying Assumptions:

1. all banks have same desired/targeted reserve ratio
2. no cash drain (amount of cash held by public is fixed)
3. bank capital is zero (for numerical examples)

Desired Reserve ratio of Banks

Assets	Liabilities
Reserves 40	Deposits 400
Loans 360	

Reserves = Vault cash + Deposits at Bank of Canada

Reserves earn low or zero interest

Loans earn market interest rate

Desired Reserve ratio = Desired Reserves / Deposits

Assume: Desired Reserve ratio = .10

Multiple deposit creation

Step One: Individual deposits $100 in cash at Bank 1

Bank 1 Initial

A	L
Reserves +100	Deposits +10

Bank 1 Intermediate

A	L
Desired Reserves+10	Deposits +100
Excess reserves +90	

You earn no interest in the excess reserves, therefore bank will try to earn interest on that $90

Bank 1 Final

A L
Reserves 10 Deposits 100
Loans 90

Step two:
Individuals borrow 90 spend this sum o textbooks for inventory.
Textbooks seller deposits cheque in Bank 2

Bank 2 Initial

A L
Reserves +90 Deposits +90

When the cheque clears, bank will have additional reserves of 90

Bank 2 Intermediate
A L
Desired Reserves +9 Deposits +90
Gross Reserves +81

Additional Deposits (increase in Money supply)
Bank 1: +100
Bank 2: +90
Bank 3: +81
[Continuous]
_____
+1000

Deposit (Money) Multiplier = change in deposits/ change in Reserves

Depisit multiplier = 1/ desired reserve ratio
= 10

student Exercise:
If an individual withdraws 100 in cash from bank 1
Desired reserves > actual reserves ➔
Bank 1 calls in (reduces) loans
Result is multiple deposit <u>contraction</u>

Conclusion: Multiple Deposit Creation

Change in Deposit = change in reserves/ target reserve ratio

Change in D = change in reserves / c + v

v = target reserve ratio
c = cash-deposit ratio
if c = 0

Bond prices fall as interest rate raises

1. Houshold hold wealth : money and bond
2. Single – Payment Bond ($100, in one year)

Bond price = 100/(1+r) r – interest rate

R = 2% ➔ bond price 98.04%, 100/(1.02) = 98.04
R=5% ➔ bond price 95.24 100(1.05) = 95.24
Etc.

If invested $95.25 for 1 year at 5%, this sum would grow to 100
95.24 is a present value of 100 due in 1 year, if the discount rate is 5%

Wednesday, March 10, 2010

Demand for Money

Money Supply: Currency + bank deposits

Money Demand, Money Supply: determine interest rate

What are determinants of Money Demand ?

The demand for money: Intuition
Households hold two assets
Money (Currency + bank deposits): pays no interest
Bonds: pay interest

You have:
money $1000
Bonds 10 000

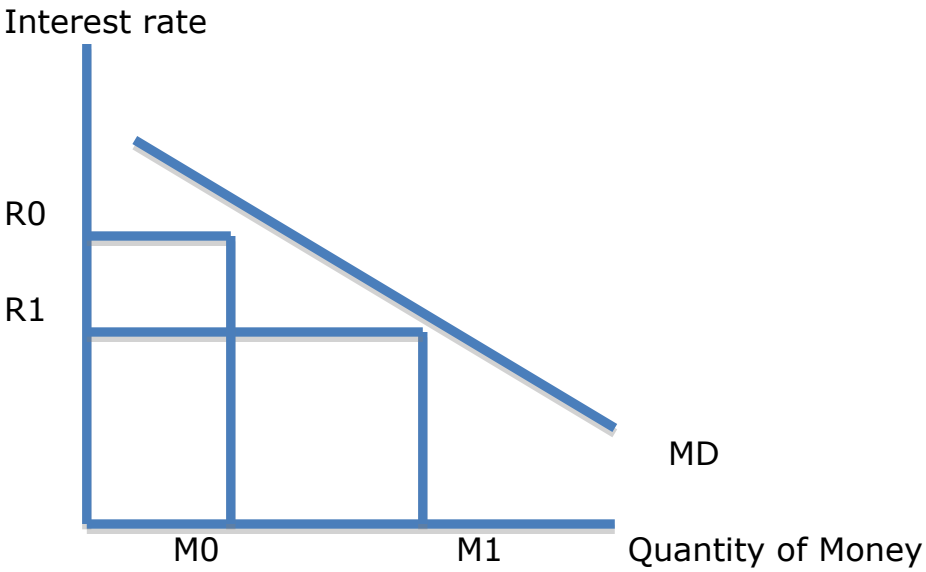
Would you increase or reduce money holding if :
1. The interest rate rises from 5% to 10% ? less
2. Your income rises, so you gonna be spending more on goods and services? Increase
3. Prices in the economy increase. So you have to pay more for the same goods and services you plan to purchases?

Demand for money

Result	Reason
Falls as interest rate increases	1. Money does not pay interest 2. Opportunity cost (interest forgone) of holding money increases
Rises as real GDP Increases	real volume of transactions increases
Rises (proportionally)	Dollar volume of transaction increases
price level increases	

Symbol for interest rate

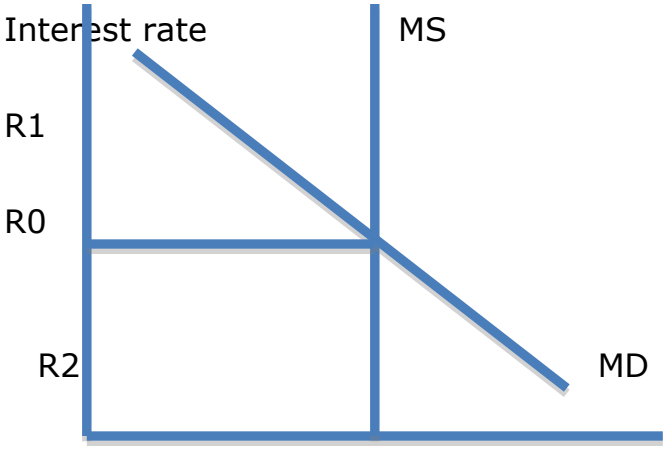
Lectures: r
Lipsey-Ragan: i



Observations:
MD – demand for money, given values of y (real GDP) and P (preice level)

R0 falls to r1 ➔ quantity demanded of money increases from M0 to M1

If y or P were to increases, MD schedule would shift to right



Quantity of money

MS: determined (fixed)by bank of Canada

At r1 (above equilibrium) MS > MD => agents try to reduce money holding and to purchase bonds ➔ bond price goes up ➔ interest rate goes down

At r2 MD > MS ➔ agents try to increase money holding and to sell bnds ➔ bond price to fall and ➔ r go up

R0 MD = MS, no change in r(equilibrium)

MS is perfectly inelastic ➔ if MD not = MS, then interest rate change and MD adjusts until MD = MS

All of the adjustment is on the demand side, because SS is inelastic

Example: Bank of Canada increases money supply, interest rate will fall

How does Bank of Canada increases money supply ?

Increasing bank reserves

Bank of Canada (B/C)
Conduct Monetary Policy

Transmition Mechanism

Expansionary policy to lower unemployment

Money Supply M goes up → interest rate falls → housholds increases expenditure on automobils during goods

firms increase expenditure n plan

equipment
AD0 shifts right

If the interest rate in Canada falls, what happens to value of Canadian Dollar ?
Go down
Why ?

Foreign Exc Market: digression
If interest rate in Canada falls, will foreign investors buy more or fewer Canadian bonds ?

Fewer, foreign investors

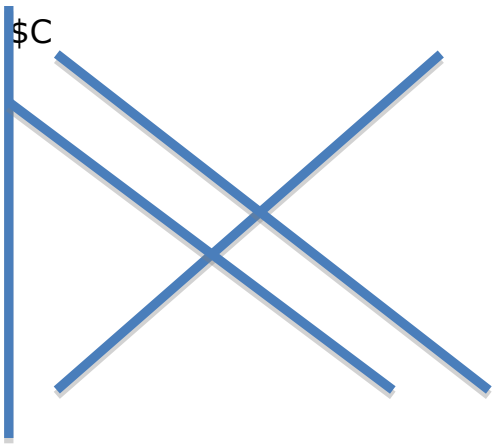
3. If f investors buy fewer candian bonds, what happens to demand for CAD?
Down

If demand for cad declines, what happens to price of Canadian dollar ?
Price falls

International Channel (Ex policy)
Money supply up => interest rate falls => price of CAD falls
=> exports up, imports down

Foreign Exchange market

price of $C



Quanitty of $C

Interest rate in Canada down
Foreign investors demand less Canadian securities
Dd shifts left t
C declines in price (depreciation)

Monday, March 15, 2010

Expansionary Monetary Policy

Transmission Mechanism

Money Supply [M] up ➔ Interest rate [r] down

Domestic Channel

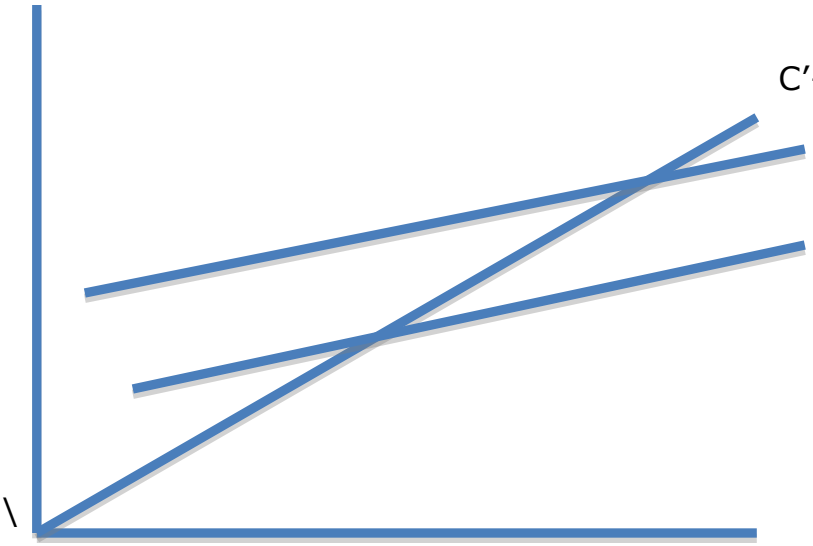
Consumption UP
[C]
Investment up
[I]

Interenational channel
Domestic currency
Depreciates MAKE SURE I KNOW this!!!

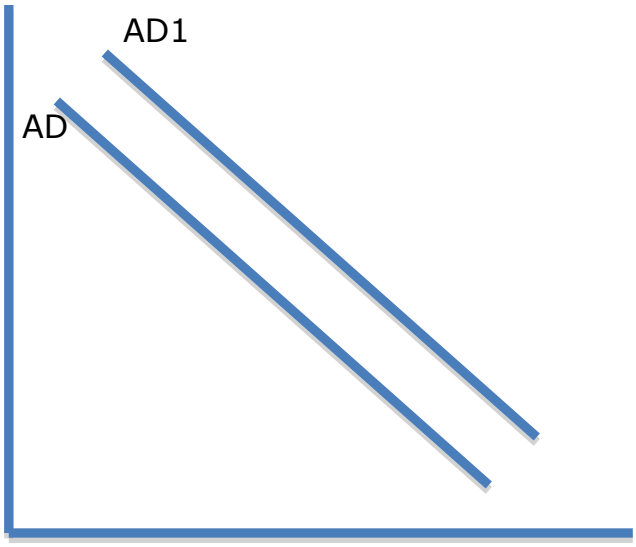
Exports UP

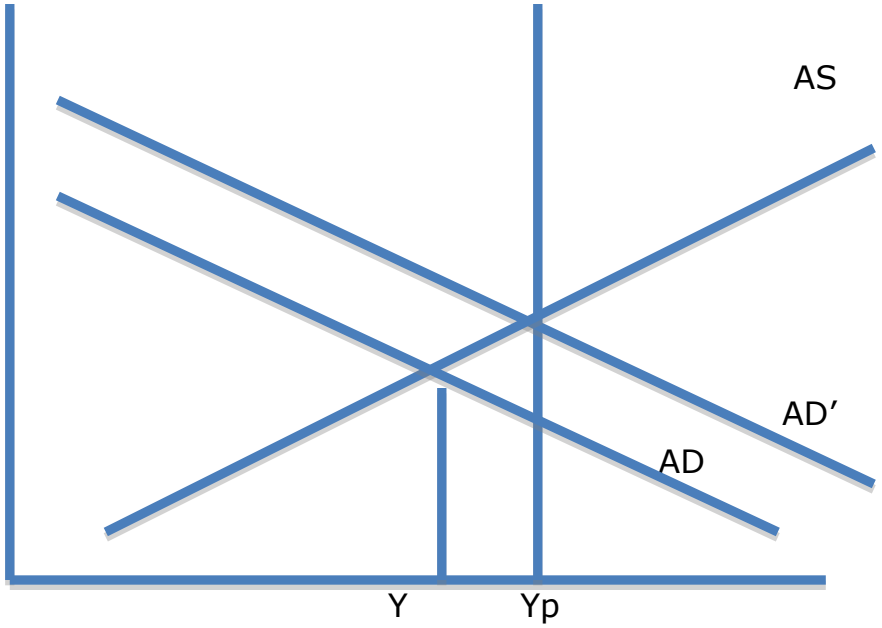
Imports DOWN

Expansionary Monetary Policy



Note: I’>I
C’>C
X’>X
M’<M





Recessionary gap

Tools to Control Money Supply

Open Market Operations

Expansionary Policy

Bank of Canada ➔ buys government securities
➔ bank reserves goes up
➔ money supply increases (multiple deposit creation)
➔ interest rate goes down

Restrictive Policy

Bank of Canada does opposite

MAKE ON MY OWN

Multiplier Effect of Open Market Opereations

1. Bank of Canada buys $100 in government securities and pays by issuing new currency
2. Vendor Deposits 100 of currency into Bank 1

Bank1 Initial

A L

Reserves +100 Deposits +100

Bank1 desires to hold only 10 in additional reserves. Lends 90 to small business

Bank 1

A L Final

Reserves 10 Deposits 100

Loans 90

Small business deposits 90 in Bank 2. Bank 2 holds 9 as additional reserves. Lends 81 to client, ETC

{Multiple deposit creation }

Money Supply or Interest Rate ?

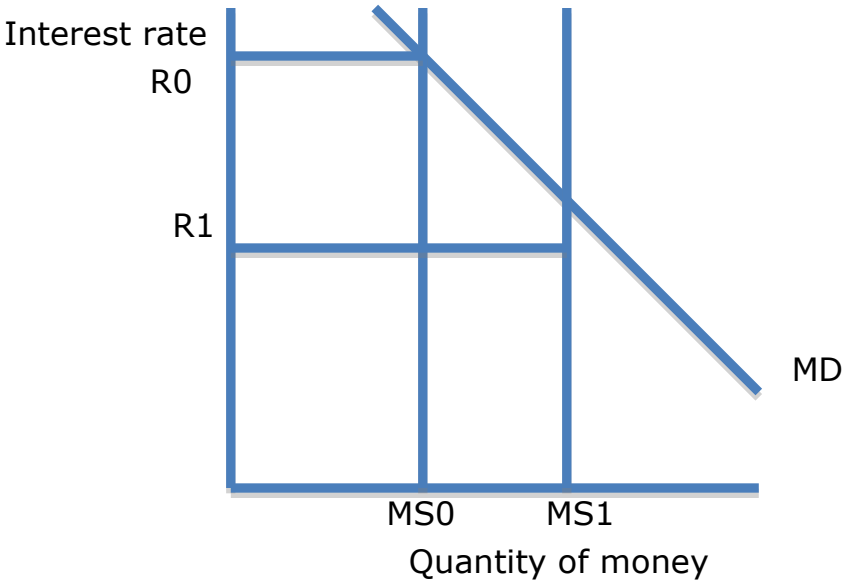
Expansionary monetary policy

1. central bank increases money supply (lowers interest rate)
2. central bank lowers interest rate (increases money supply)

Lectures emphasize:

While B/C emphasizes (2)

Insight: Different Prospective



To lower the interest rate B/C increases money supply

If B/C increases money supply, interest rate falls

Difficulties in Using Monetary Policy

Long and variable lags in impact of monetary policy

Investment, consumption expenditures take time to respond to interest rate to change

Exports, imports take time to respond to exchange rate changes

2. Estimation of lag : 12-24 months

Monetary Policy

Bank of Canada controls money supply/interest rate to influence aggregate demand

Fiscal Policy
Government uses expenditures/ taxes to influence aggregate demand

March 2009 Deep Recession

Central Bank's target Interest rate	Implication
Canada 0.5	Almost no potential for further stimulation to AD
U.S 0.5	from interest rate cuts

➔ Potential to use Fiscal policy was limited
Result: U.S. and Canada adopt expansionary fiscal policy

Government Budget

Outlays

1. Government expenditures
2. Transfer payments to households (IE, social assistance, pensions)
3. Interest on public debt

Revenue:
Taxes

Revenues + Outlays = 0 ➔ Balances budget
Revenues - Outlay> 0 ➔ budget surplus
Revenues _ Outlay < 0 ➔ budget deficit

Budget deficit ➔ future outlay must be reduces and/or future revenues (taxes) increased

Large budget deficit ➔ higher (effective) taxes burden on future generations

1. Governemnt increases expenditure by $100 million.

2.Which will cause largest (upward) shift in AE

100 spent on domestic goods ?

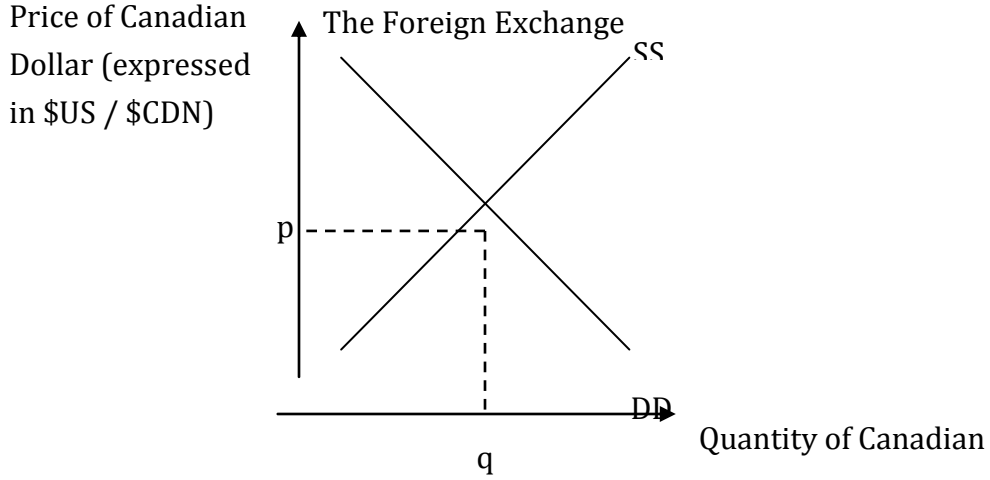
75 spent on domestic goods, 25 spent on imports ?

Answer
100 spent on somestic goods (AE shifts upwards by 100 instaed of 75)

Insight:
1. Countries may require that government expenditures be n domestic goods (only)
2. Danger (economists) protectionist steps hurt trade, recovery of world economy

Wednesday, March 17, 2010

<u>Exchange Rates</u>
<u>Concepts</u>
DD and SS for Canadian dollar
Has changes in foreign exchanges value of Canadian dollar affect imports and exports.



Unemployment

Labour Force Activity

Labour force = Number of employed + Number of unemployed (but looking for work)

Unemployment Rate = $\frac{\text{Number of unemployed}}{\text{Labour Force}} \times 100$

Participation rate = $\frac{\text{Labour Force}}{\text{Adult Population}} \times$

Q: If number of jobs = number of workers, would the unemployment rate be zero?

A: Frictional: mismatch reflects normal labour turnover

Structural: mismatch in skill level, occupation, or region

Cyclical unemployment related to business cycle

Macroeconomic in origin

NATURAL RATE OF UNEMPLOYMENT

Cyclical unemployment is zero → unemployment is frictional or structural

When economy is at the natural rate of unemployment (NAIRU):

Real GDP = Potential GDP

Recessionary gap is zero

Natural rate, Canada: 6% (approximate)

Unemployment Rates	February 2010
Canada	8.2%
US	9.7%

Question

Should the government make unemployment benefits more generous (easier to qualify; longer period of benefits) in regions where unemployment is high?

Insight

What incentives would this create?

Answer

This would increase unemployment, by discouraging the unemployed from leaving high unemployment regions.

Why is employment insurance program designed in this manner?

Politics

More generous program → more votes in Newfoundland (and other maritime provinces)

Yet incentives cause
Higher unemployment
Less education

Type of Unemployment	Government Response
Cyclical (recessionary gap)	Fiscal / Monetary Policy to increase Aggregate Demand.
Frictional / Structural	Labour Market

Example: make employment insurance benefits less generous to raise opportunity cost of being unemployed

Inflation

Inflation: the rate at which the price level is rising

Money Supply Growth and Inflation

Economy is at full-employment.

Money supply increases

Student Exercise:

A.D. shifts right ("inflationary gap")
Price level increases as inflationary gap is eliminated
Repeated increases in the money supply produce
repeated increases in the price level and thus create inflation.
Money Growth – Inflation Link
Hyperinflations (greater than 1,000 percent per year)
25 countries have experienced (since 1980)

In all cases: inflation rate equals (approx) money growth rate
Why do countries permit such rapid growth of money supply?
Governments print money (rather than raise taxes or borrow) to finance spending.

Monday, March 22, 2010

Inflation

1. Money Growth and Inflation
2. An Inflation Fallacy
3. Redistributive Effects of Inflation
4. Interest Rates and Inflation
5. Why inflation is Bad ?

An Inflation Fallacy

The Fallacy : Inflation robs people of the purchasing power of their incomes.

Reality: If price level doubles (inflation of 100%) then incomes in total must double as well

Intuition : Expenditure = Income

Mary pays John $20 to mow lawn;
Expend (20) = Income(20)

100% Inflation Mary pays John $40 to mow
Expend (40) = Income(40)

Problem: If price doubles, not everyone's income will double, so inflation creates winners and losers.

Redistributive Effect of UnAnticipated Inflation
Workers, Firms: concern is with real level of wages

Expected Inflation 3%
Planned real wage increase 2%
Nominal wage increase 5%

Case 1: Actual Inflation > Expected Inflation
Inflation = 5% - real wage increase
= 5%-%% = nil (not 2%)

Case 2: Actual Inflation < Expected Inflation

Inflation = 1% - real wage increase
=5-1 = 4% (not 2%)

Inflation and Interest Rates
1. Lend 1000% for 1 year at 10%
Interest = 100%

2. Is lender 100$ "better off" at the end of the year ?

Depends on the Inflation Rate

Better off ➔ increase in purchasing power

If inflation is 5%, 100 must increases by 50 to 1050 to purchase same basket of goods and services

Inflation	Better off?	How much ?
0%	YES	$100
5%	YES	$50
10%	NO	0
15%	Worse off	-50%

Nominal interest rate:
Interest rate without correction effect of inflation

Real interest rate
Interest rate corrected for inflation

Borrower, lender ➔ should be concerned with real interest rate => change in purchasing power

Case 1

Expected Inflation: 0
Real Interest Rate: 5%
Nominal Interest rate: 5%

Case 2:
Expected Inflation: 5%
Real Interest Rate: 5%
Nominal Interest rate: 10%

Nominal Interest rate = Real interest Rate + Expected Inflation

	Year	
	1981	2006
Nominal Canada bonds	16%	4.25%

Inflation	13%	2%
Real rate:	3%	2.25%

Does Inflation Hurt Savers?

Answer: Only if Unanticipated

Redistributive Effects

Real Interest Rate 4%
Expected Inflation Rate: 5%
Nominal Interest Rate: 9%

1. Actual Inflation (8%) > Expected Inflation (5%)

Real Interest rate will be 9-8 = 1 (not 4%) "Lender loses ", "borrower wins"

2. Actual Inflation (2%) > Expected Inflation (5%)

Real interest rate will be 9-2=7% (not 4%)
Lender wins
Borrower loses

Wednesday, March 24, 2010

Comperative Advantage and The Gains From Trade.

Production Possibilities

	Cloth	Corn
John	15	3
Jane	32	16

Opport Cost

John	0.2 corn	5 cloth

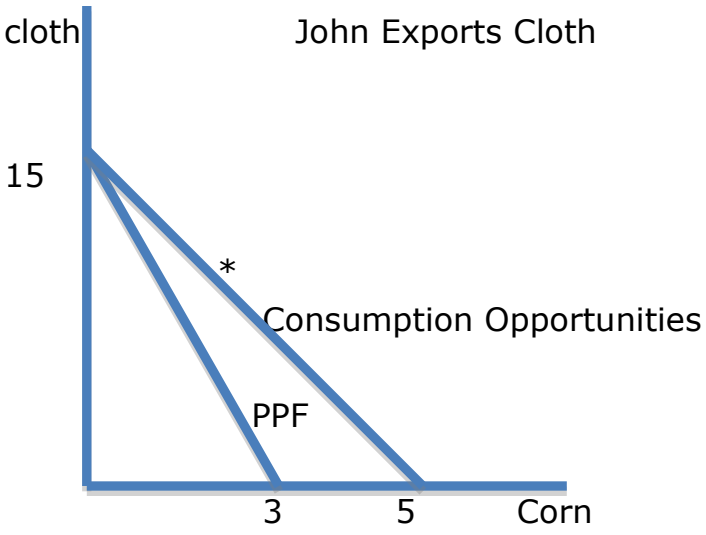
Jane 0.5 corn 2 cloth

John has a comperative advantage in production of cloth (he can produce at a lower oppt cost, 0.2 vs 0.5)

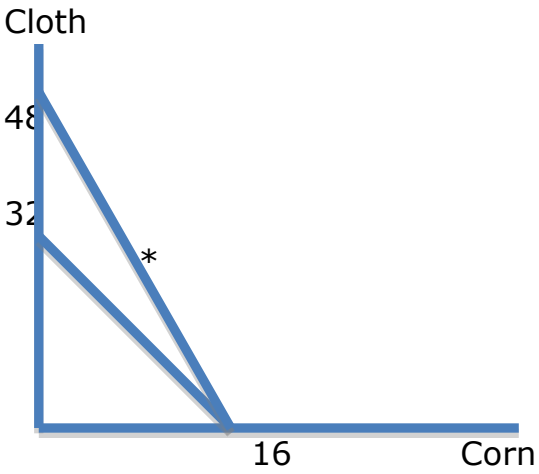
John will specialize in production/ export cloth
Jane will specialize in productuin/ export corn

Asssume trade ration is 3 cloths for 1 corn

John and Jane can consume combination of cloth and corn outside own PPF



Jane Exports Corn



Observation: Asterisks illustrate consumption bundles of cloth and corn outside of the PPF of John and Jane

Opportunity Cost (to produce One Corn)

John: 5 cloth
Jane: 2 cloth

Trade: 3 cloth per one corn

Trade ratio must lie between opportunity cost of John and Jane if both benefit from trade

The Gains from Trade: Nations

Overall Gain

With trade, a country can consume outside its PPF by specializing in the production of goods in which it has a comparative advantage

How can u tell If a country has comparative advantage in the production of good ?

Answer: look at which goods the contry is importing and exporting

Domestic price< world price ➔ country has a comperative advantage and will export good

Domestic price> world price ➔ country does not have a comparative advantage and will import

World price: internationally traded goods with low transportation costs must sell at same price in all countries

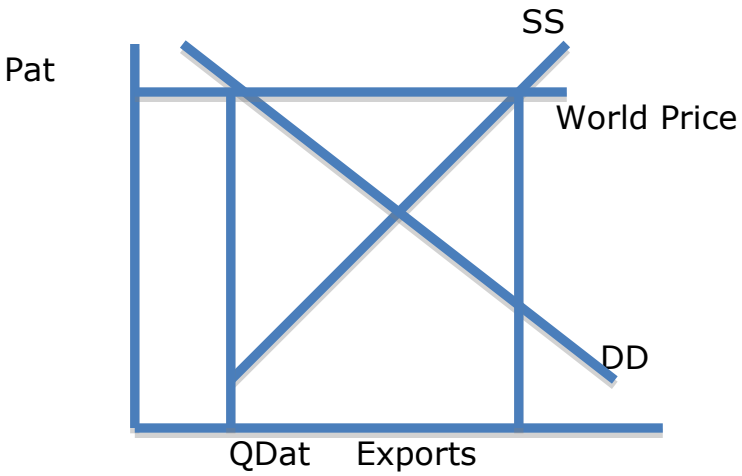
Domestic price < world price : indicates low opportunity cost of producing domestic good

Example: Canada has C.A. in prodicing Wheat

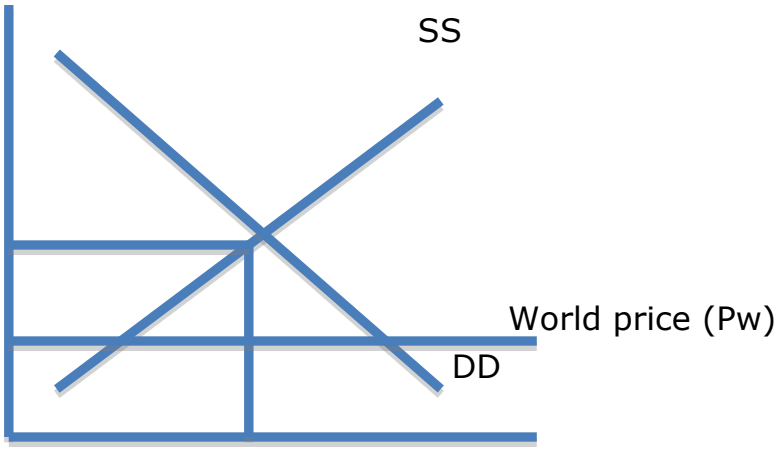
Pbt (before trade)

Qbt

Canada has a C.A. in the prod of wheat



Canada doe not have a comperative advantage in producing of textiles



International trade
Higher world output (greater productivity)

Higher real GDP per capita (economic "well being")

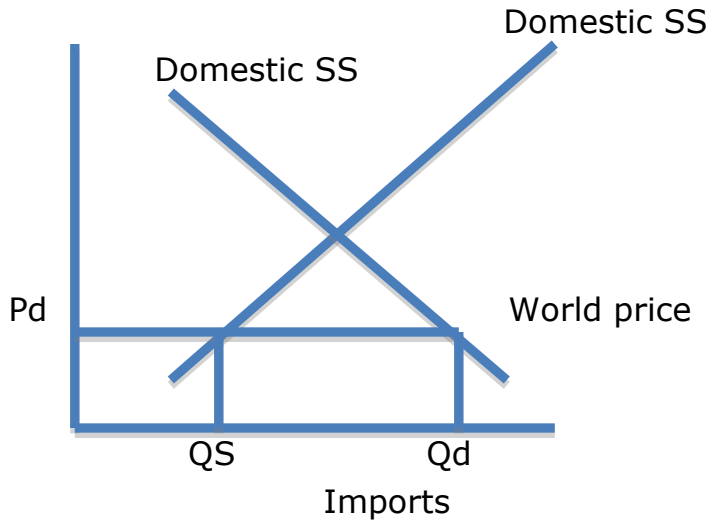
Monday, Mach 29, 2010

Tariffs(tax imposed on imported goods)

Why do contries impose tariffs?
To protect import-competing industries ('special interests")

Example:
1 Country mports a good(and also produces good domesticly)
2 Country is small and takes the world prices as given

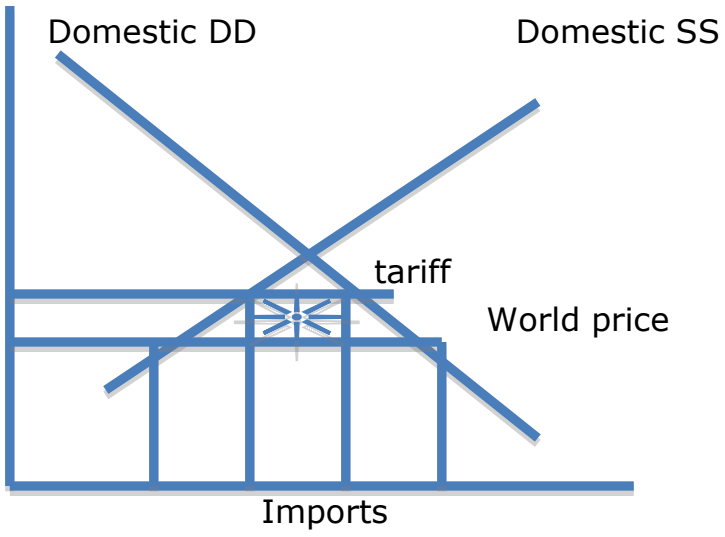
Before tariff



Canada does not have comperative advantage in this diagram

Pd= domestic price (= world price)
Qs
Qd
Qd-Qs = imports

After tariff



After Tariff:
Imports declines form the previous diagram to the star area

Politics of Tariffs Reductions (Freer Trade)

Tariff reduction

1. Relativelt few workers lost jobs ➔ lobby against freer trade and suffer big losses

2.
Many consumers benefit by a small amount ➔ not likely to organize in
From lower prices in favour of freer trade

Summary

Freer trade: world output higher
Higher real GDP (per capita)
Trade Protection (Tariffs/Quotas):
Special interests benefit (politics)
Lowers real gdp (pre capita)
Lowers total surplus (consumer + producer)

Common Fallacies :

1. One country benefits ➔ the other country loses
2. Counties with high – paid workers cannot compete with countries with low –paid workers

Demand curves:

1. Change in quantity vs change in demand
2. Substitutes vs compliment
3. Normal vs inferior goods
4.

Incidence of a sales Tax
(Who ultimately pays tax, the buyer or the seller ?)

Assume tax to be paid by seller

(Remember: incidence does not depend on whether paid by seller or by buyer)

Insight: Tax revenue and Elasticity of the DD

Observations:

Perfectly inelastic DD: market price incrases by amount of ta ➔ full incidence falls on buyer

Perfectly elastic DD: market price does not increase ➔ full incidence falls on seller

Long Run equilibrium under Perfect Competition

Insight: P = ATC so assess what happens to ATC

Aoolication:
York University , due to facility strike offers $500 to each student who indicated he/she will suffer financial hardship
York budget for 200 students

Problem:
20 000 student

Marginal benefit: 500
Marginal cost: 0

How many students will undertake action ?

York cancels program when 2000 students show up on first Monday to apply.