Simon @ 96890510 Email: simon@economicsfocus.com.sg

Economics Notes: Demand and Supply/Government Regulation

(i) Main Definitions and Concepts

1.1. Demand

- Demand refers to the consumer's desire and willingness to purchase based on consumer satisfaction and the ability of the consumers' purchasing power to purchase goods and/or services at a particular period of time and the maximum level of price.

1.1.1 Assumptions (Rational consumer behaviour – maximization of their satisfaction)

- Consumers spend all income on goods and services/ maximisation of consumer welfare
- Consumers always prefer more of a normal good as compared to less.
- Producers always aim to maximise profits by supplying more of a good at a given price level.

1.2. Demand Curve

- The demand curve shows the inverse relationship between the price of good and the quantity demanded of the good, ceteris paribus.
- It represents the **maximum** price that consumers are willing and able to pay for 1 unit of the good

✱The demand curve is downward-sloping (inverse r/s between P & qtydd) because of the **income effect** and the **substitution effect** that is reflected when the price of good changes.

- Income effect reflects a change in **real** income when there is a change in the price of good, ceteris paribus. For example, when the price of good increases, the consumer can buy more units of the good with the same amount of money. (increase purchasing power)
- Substitution effect reflects the consumers' switching to, or from, alternative good due to a change in price of one good. For example, a rise in price of good A cause a fall in quantity demanded of good A because consumers switch to a cheaper alternative.

1.3. Change in Quantity Demanded

A change in quantity demanded is the change in consumption of the goods due to a change in the price of the good concerned. This is represented by a movement **along** the demand curve.

1.4. Change in Demand

A change in demand is a change in the consumption of the goods due to factors other than the change in price of the good concerned. This represented by the **shift** of the demand curve.

1.6 Determinants of Demand

- Determinants of Demand can be classified as price and non-price determinant. Price determinant will cause a change in quantity demanded while the non-price determinants will cause a change in demand.
- Price of the good concerned
  An increase in the supply of the good concerned will lead to a fall in the price of the good concerned and thus, contributes to an increase in quantity demanded and vice-versa.

Demand may shift when there is a change in the **price of related goods**

- Substitute is a commodity that can be used in the place of another. The decrease in price of the substituting good leads to a decrease in demand of good concerned.
- Complement is a good that can be used in conjunction with another. An increase in price of a complementary good results in a decrease in quantity of the good concerned.

❖ Change in the consumer's real disposable income
❖ Increase in income will increase the demand of a **normal** good
❖ Increase in income will decrease the demand of an **inferior** good (proportion income of spent on the good)

- The budget airline to HCM – normal or inferior – it is inferior as the proportion of income spent on the good has become smaller.

- Change in tastes and preferences
  - A change in tastes and preferences changes the consumers' desired demand of the good.
  - Changes in preference can be brought about by advertisements, promotions, education, culture, etc.
- Population and demographics
  - Change in demographics of the population affects the potential consumers and market size of the good concerned.
  - For example, an ageing population increases the demand of elderly healthcare services.
- Government policies
  - Implementation of government policies and law can compel consumers to demand more for certain goods.
  - For example, implementation of ERP leads to an increase in demand for cash cards and in-car payments units.
  - Expectation of future prices
    An expected decrease in future prices would decrease current demand for good concerned as consumers would postpone consumption now and increase demand in future

↓P,↑relative Y (in terms of purchasing power will increase)
→Normal good→↑Qty dd
→Inferior good → ↓Qty dd
Substitution effect→↓P_x→↑Qty dd_x
∵↓dd for Y

i) Normal good →↓P_x→Y effect (↑Qty dd) + Sub effect (↑Qty dd)
⇨ Y effect + Sub effect → more than proportional ↑ Qty dd – Price-elastic dd
(E.g. Students to KFC)

ii) Inferior good →↓P_x→Y effect (↓Qty dd) + Sub effect (↑Qty dd)
⇨Sub effect > Y effect → less than proportional ↑ Qty dd – Price-inelastic dd
(E.g. Adults to KFC)

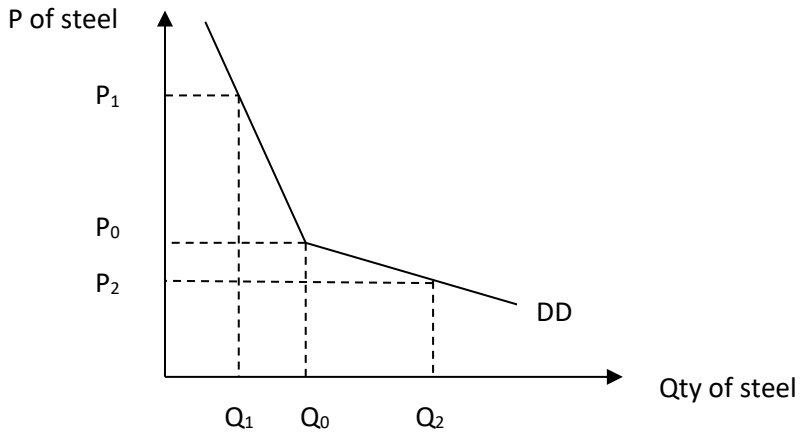
1.7 Types of demand

- **Joint demand:** The relationship of the two goods is complementary in nature, implying that the increase in quantity demanded for good A will lead to the increase in demand for good B.
- **Competitive demand** (substitutes in nature): The two goods are substitutes for each other, implying that the increase in quantity demanded for good A will lead to the reduction in demand for good B. For example, specially-brewed coffee and soft drinks.
- **Derived demand** (dependency in nature): The relationship of the two goods is linked in such a way that the demand for good A is dependent on the quantity demand of good B. For example, brick and houses.
- **Composite demand**: The demand for the goods comes from many sources. (It can be used in many ways by different types of consumers.) For example, steel.

Qn: Explain the price-elasticity of demand for steel

✓ Price-inelastic for the portion of demand when P↑ (High degree of necessity of dd – essential resource)

✓Price-elastic for the portion of demand when P↓ (many sources of use)



2.1 Supply

- Supply refers to the amount of goods and service producers are willing to produce based on profit motives and ability to produce based on production capacity to offer up for sales at particular price over a certain period of time.

2.2 Supply Curve

- The supply curve shows the positive relationship between the price of good and the quantity of goods supplied by all the producers in the industry.
- It represents **minimum** price that all producers are willing to accept and able to produce.

✱Supply curve is upward sloping because producers always aim to maximise profits by selling more at a higher price.

2.3 Change in Quantity Supplied

A change in quantity supply means that the change in production capacity is due to the change in the price of the good concerned. This is represented by a movement **along** the supply curve

2.4 Change in Supply

- A change in supply means that the change in production capacity is due to some other factors beside the price of the goods concerned. It is represented by the **shift** of the supply curve (See 3).

2.5 Determinants of Supply

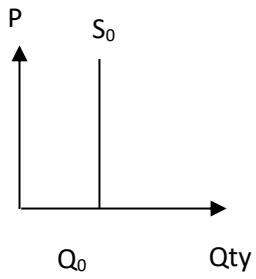
- Determinants of supply can be classified as the price determinant (factor - △ in COP) and non-price determinants. For price determinant, it will contribute to an increase in quantity supplied (△ in SS) while for non-price determinants they will contribute to a change in supply.
- **Price of the good concerned**

  An increase in demand for the good concerned will contribute to an increase in price of the good concerned and thus, it will lead to an increase in quantity supplied.
- **Prices of inputs /cost of production**
  - A rise in the price of the resources such as wages or price of raw materials will increase the cost of production, leading to a decrease in supply of the goods.

- **Availability of resources**
  - If the availability of resources is limited, the production capacity will be lesser, thus making it difficult for the industries to increase production. It is likely the cost of production will increase and thus, the supply of goods will reduce.
- **Prices of related goods**
  - Change price of related goods can affect the supply of goods concerned.
  - For example, whale meat and whale blubber are of joint supply. Hence the increase in supply of one good results in the increase of supply of anothergood.(by-products from production can increase the SS of the other good)
  - Beef and milk are of competitive supply. The more cows are slaughtered for beef the less there is to produce milk.
- **Technology**
  - An improvement in technology will raise productivity of the industries and help to lower cost of production and this enables the industry to increase the supply of the good.
- **Taxation and subsidies**
  - Increase in taxation will lead to an increase in cost of production which will lead to a decrease in supply of the good.
  - Increase in subsidies will lead to a reduction in cost of production which will lead to an increase in the supply of the good.
- **Numbers of firms**
  - An increase in the number of firms in the industry will lead to an increase in the supply of the goods.
- **Goals of the firm**
  - If the aim of the firm is to increase the production level so as to reap benefits of large scale production (reap EOS), the supply of the good will increase.
- **Weather and endowment of resources**
  - Certain products' production capacity is constrained by the weather condition distribution of the endowment of the natural resources and hence the supply of the good may increase or decrease.

2.6

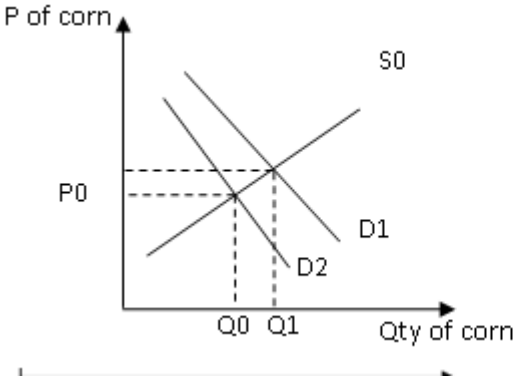
<u>Types of supply</u>



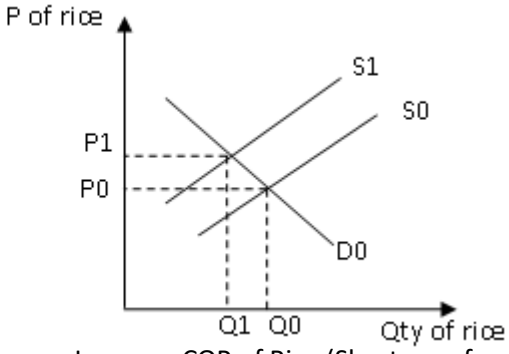
Fixed Supply Curve
i. Stadium capacity
ii. -COE – new cars

- **Fixed supply curve**: The supply of the production is restricted and fixed and it will not change in accordance to the change in the price level. For example, the fishery industry has its production capacity fixed by natural environment factor.
- **Joint supply**: The increase in quantity supplied of a good will lead to the increase in the supply of another good as the production of one good will create the by-products which can be used for the production of another good. The increase in the supply of these resources will lower down the cost of production for latter, thus leading to an increase in the supply of the good. (Beef and leather skin)
- **Competitive supply**: The increase in supply of one good will lead to the reduction of another good as the production of one good (competing for same resources) requires resources for production which is also used for the production of another good. Due to the condition of limited resources, the cost of these resources will increase which will raise the cost of production and thus, contributing to the fall in supply of the good concerned. (beef and milk – same resource which is the cow)

Competitive supply → increase in qty supply of one good will lead to reduction in the supply of another
→Competing for same resources
e.g. Increase in DD for corn → Increase P of corn → ↑ Qty ss of corn→ decrease ss of rice – competing for the land



Increase DD→ Increase P of corn
→Increase Qty SS of corn
→Increase DD for land to produce corn



Increase COP of Rice (Shortage of land)
→Decrease SS of rice → Increase P of rice
→Decrease Qty dd for rice

→reasons why competing for more same resources of land

- Why increased dd for bio-fuel will lead to increase price of rice?
- Why increase in price of oil will lead ot increase in price of rice
- Increase in price of oil→decrease qty dd of oil→ increase dd for bio fuel→ increase dd for corn (competitive dd (oil/bio-fuel) (competitive ss) (corn /rice)
- increase in price of oil will increase the transport of cost of rice – this will lead to cost of production of rice – decrease in supply of rice – increase in price of rice

✱Qn: Why↑ P of oil will lead to ↑ P of rice? (8)
↑P of oil →↓Qty dd for oil→↑dd for biofuel→↑ dd for corn→↑ price of corn→ ↑ qty ss of corn → ↑dd for land →↑ COP for rice →↓ ss of rice → ↑P of rice
1. oil and biofuel are substitutes, 2. Corn is a derived demand for biofuel 3. Competitive supply
No of diagrams to be drawn –

1) oil market]
2) biofuel market
3) corn and rice market

3.1 Market Equilibrium

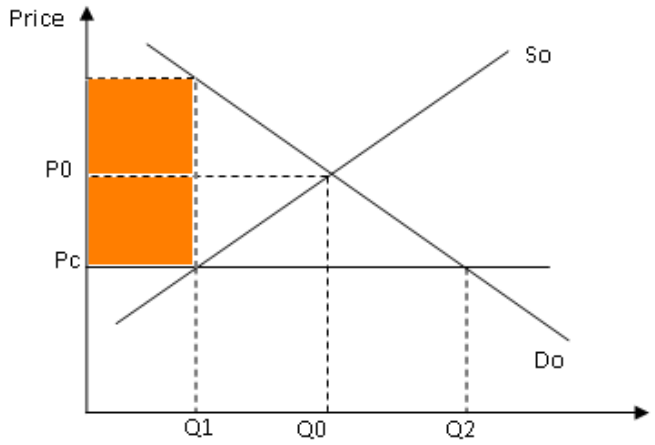
- This condition of market equilibrium is attained when the market demand is equal to market supply. At equilibrium, the **market clearing price** and quantity is determined.
- In this situation, buyers and sellers have no incentive to deviate from their current economic actions
- Any change in demand and supply condition will lead to a change in market equilibrium that will depict the impact of the change in demand and supply on the market which will depict the new equilibrium price and output level
- Impact on market for air travel due to rise in oil price and global recession
    - ⇨ price and o/p
    - ⇨ consumer and producer surplus

3.2 Consumer and Producer Surplus

- Consumer surplus is the difference between the maximum amount that consumers are willing to pay for a given quantity of good and what they actually pay (equilibrium price).
- Producer surplus is the difference between the amount received by producers and the minimum amount that they are willing and able to accept for supplying the good.

3.3 Price Ceiling

- A maximum price set artificially by the government of firms so that goods are bought and sold at that price level which is below the market equilibrium price level. There will be a reduction in qty supplied and an increase in qty dd, which will cause an excess dd condition. E.g. HDB Public Housing



original price is set T Po and the price ceiling is at Pc – increase in quantity and decrease in quantity supplied - shortage at Pc – Q1 Q2

⇨ evolve the rise of black market price at Pm – the highest price the consumer is willing to pay at this price level

- **Reasons** for charging price ceiling:
  - To prevent over-charging and have an equitable distribution of the product.
  - To control the release of scarce and essential goods (especially during war time)/ essential merit good.
- **Difficulties** in imposing price ceiling
  - May create an excess demand condition which cannot be resolved if there is no buffer stock.
  - It contradicts the market principles which will undermine the efficiency of the economy. (shift and costless adjustment of recourses)
  - may give rise to black market price if the market cannot have excess supply from buffer stock to meet demand

Simon @ 96890510 Email: simon@economicsfocus.com.sg

- **Effects** of price ceiling
  Shortage of goods in the market requires rationing. ↗ HDB→ Social allocation
  Black market may evolve. ↘
  Required to keep a buffer stock. University→ Meritocracy

US Government set price ceiling during oil crisis in 2010 but the black market fails to evolve as the US government can take from the buffer stock to meet the excess demand.

UAE set up price ceiling for the rice market but they do not have a buffer stock to meet the excess demand. Consequently, a black market evolves.

HDB set price ceiling and there is no buffer stock to meet excess demand – but there is no black-market price – why? there are laws to control ownership

Rationing based on social allocation – draw lots, social based criteria
legal binding – prevent black market price

3.4 Price Floor

- A minimum price set artificially so that goods are bought and sold at that price level which is above the market equilibrium price level

- Reasons for setting floor price
  - To protect the interest of the supplier (labour market, resource market) – to maintain their income – e.g. Wage.
  - To stabilize the price of primary products→ maintain revenue for farmers
- Effects of Price floor
  - Excess supply
  - Government needs a sum of money to stabilize the market. Hence, the government will attempt to use the method of price setting that will incur the least level of government expenditure. If the demand and supply are price-inelastic, the government will buy up the excess stock to create a buffer stock, assuming that the stock is non-perishable. (oil)
  - If the demand and the supply are price-elastic, the government will subsidize every unit brought by the consumers at the level of quantity where the floor price is set with an amount equals to the difference in value of the market-clearing price and the floor price. This is also introduced when the goods to regulated is perishable as the subsidy will encourage the consumption of the goods to ensure that there is market clearance at the floor price.

3.5 Direct Tax

- Direct tax is directly levied by the authorities on the consumers/ business entry

3.6 Indirect Tax

- Indirect tax is tax levied by the authorities on producers. The producers can then pass on the burden of the tax to the consumers.
  - **Specific tax**, or per unit tax, is a constant tax amount levied on per unit of goods sold. It causes a parallel shift of the supply curve up and to the left.
  - **Ad volarum tax**, a percentage tax, takes a percentage of the price of good concerned. It changes as the price of good changes. It changes the slope of the curve as the curve pivots anti-clockwise upwards.
  - **Lump sum tax** is a fixed amount of tax regardless of the amount of quantity.

Tax Incidence

- Tax incidence refers to the distribution of tax burden between the consumers and producers.

2. (b) **Japan increased its sales tax in April 2014**. Using a diagram, explain what determines the size of the increase in the price of a good following such a tax increase. [4]

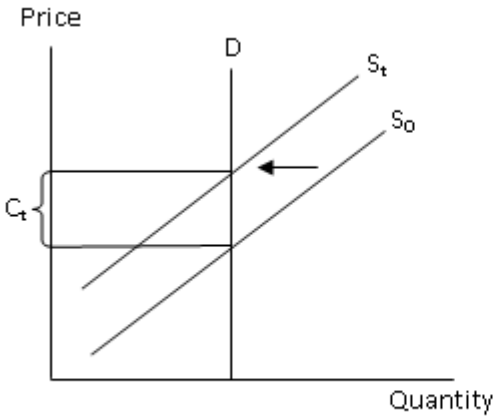
(sales tax is ad valorem – percentage change in tax based on price level – higher price tax per unit is higher)

1) how increase in tax affect the price of the goods?
2) identify and explain the factors that will affect the change in price of goods when tax is imposed?
   (PED of the goods, amount of tax, types of tax)
3) Draw diagram and describe – ad valorem

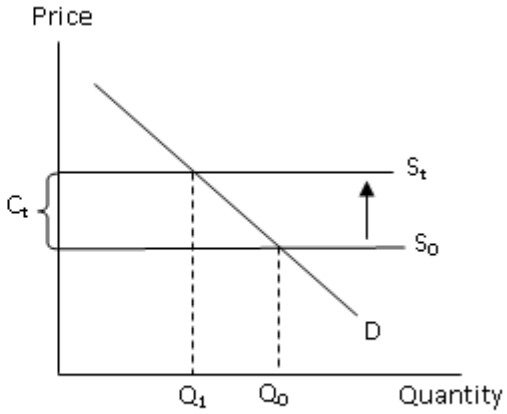
Simon @ 96890510 Email: simon@economicsfocus.com.sg

3.7 Consumer Tax Burden

- Tax incidence that falls on the consumers (C_t).
- Consumers will take the entire tax burden if demand is perfectly inelastic and if supply is perfectly elastic. (change in price= tax amt→100 % CTB)



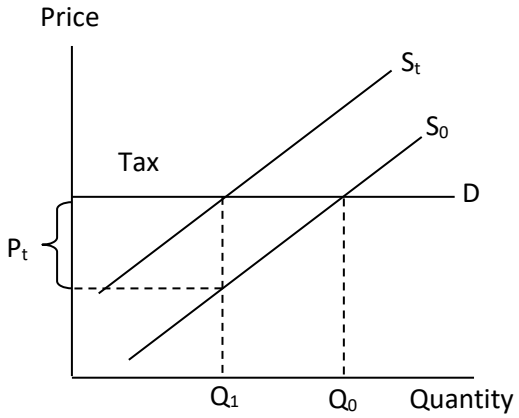
Demand is perfectly inelastic



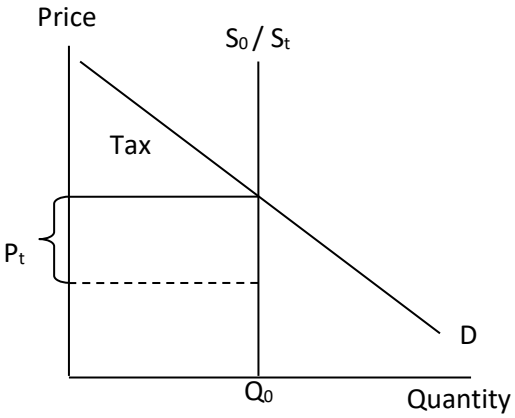
Supply is perfectly elastic

3.8 Producer Tax Burden

- Tax incidence that falls on the producers (P_t).
- Tax burden falls entirely on producers when supply is perfectly inelastic and when demand is perfectly elastic. (no. change in price- tax is 100%)



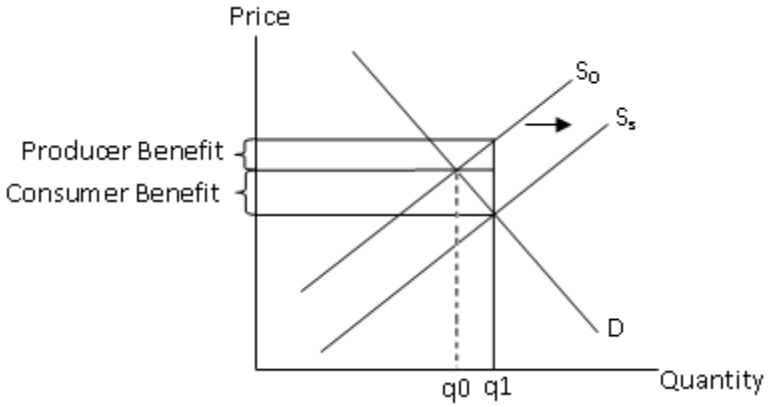
Demand is perfectly elastic



Supply is perfectly inelastic

3.9 Subsidy

- Subsidy is a payment to the producers by the government. It lowers the cost of production and shifting supply curve down and to the right.
  - Specific subsidy causes a parallel shift downwards and to the left.
  - Ad valorem subsidy causes a pivoted shift in the clockwise direction.



4.0 Deadweight Loss

- Consumer and producer welfare (surplus) loss when there is allocative inefficiencies as a result of the restriction of production due to the imposition of taxation
- Deadweight loss = C+D

process on subsidy
provision of subsidy – lower the cost of production – increase the supply – supply will shift rightward – decrease in price and increase in quantity.
producer benefit / consumer benefit (represented by the portion of decrease in price x qty)

Explain the impact on the producers and consumers when THERE IS A REMOVAL OF SUBSIDY.

1) HOW THE REMOVAL SUBSIDY AFFECT THE RPICE AND OUTPUT
2) Explain the impact of the consumer and producer in terms of the consumer benefit and producer beneift

Simon @ 96890510 Email: simon@economicsfocus.com.sg

1. Process on how market equilibrium is derived to depict the equilibrium price and output level

- Market equilibrium is attained when the market demand is equal to market supply whereby the demand curve intersects the supply curve.
- At market equilibrium, it will reflect the level of quantity and price level set by the market forces. Any changes in demand and supply will lead to a change in market equilibrium, indicating the new price and output level.
- To attain market equilibrium, the consumers and producers will engage in a negotiation process. The consumers would increase (decrease) their quantity demanded while the producers would decrease (increase) their quantity supplied as price decreases (increases).
- As the producers and consumers adjust their quantity supplied and demanded respectively as price changes, they would reach the equilibrium where they would agree to a particular price level which their quantity supplied and demanded are the same. This market equilibrium will change when there are changes in demand and supply.

2. Explain how the price level of oil will increase

- The change in the price of oil is determined by the market forces of demand and supply which will be determined at the new market equilibrium. For the case of a rise in price of oil, there must be a decrease in the supply of oil and an increase in the demand for oil that will contribute to the rise in the price of oil.
- **Causes of an increase in demand for oil**
  - (i) Increase in income – increase in demand for more manufactured goods – increase in production – increase in demand for oil (oil is derived demand)
  - (ii) Change in taste and preference
  - (iii) Taxation and subsidies
  - (iv) Government policy
- **Causes of a decrease in the supply of oil**
  - (i) High cost of the crude oil
  - (ii) High cost of production
  - (iii) Limited capacity of the supply of the resources
  - (iv) Government policy
  - (v) Technological deficiency
- It is also noted that the price of oil is likely to rise sharply **as the price-inelastic demand and price-inelastic supply condition** will contribute to this degree of a change in the price level when there is an increase in demand for oil or a fall in supply of oil.

Simon @ 96890510 Email: simon@economicsfocus.com.sg

1) Why the demand and supply oil is price-inelastic?

The price of oil will also rise despite an **increase in supply of oil as the increase in demand for oil is greater for oil is greater than the increase in supply of oil.**

2) Why the increase in demand of oil is greater than the increase in supply of oil?

The price of oil will also rise despite **an increase in supply of oil as the increase in demand for oil is greater than the increase in supply of oil.**
Why the increase in demand for oil is greater than the increase in supply of oil?

Increase in DD is > increase in ss
1. Affluence of the people →large middle Y group
2. Huge population growth
3. Difficult to increase SS→ non-renewable resources
→ Hampered by distribution

3) Why decrease in DD for air travel is > decrease in SS of air travel? (Increase in oil price)
1. Decrease in dd is broad- based as recessions affect most consumers
2. Decrease in SS is limited as the fixed cost is more influential factor than the rise in variable cost the rise in price of oil.

6. Explain the impact of the occurrence of recession and a rise in oil price on the aviation industry (air travel).

a) Explain that the impact of the aviation industry due to the above events is seen from the change in the market equilibrium of the aviation industry which will depict the change in price and output level of the air travel.
b) Explain how the recession will affect the demand for air travel. Decrease Y→ decrease dd for air travel → normal good
c) Explain how the rise in oil price will affect the supply of the air travel-> Increase COP → decrease SS
d) Explain the extent of change in the price and output level of the air travel industry after considering the following factors:
   1) The extent of change in demand and supply of air travel, decrease in DD<decrease in SS
   2) Price elasticity of demand and supply of the air travel, DD and SS are price elastic.

DD is more elastic:

- low degree of necessity
- high degree of substitution
- production of y spent is large
- time period of consideration of produce is large

SS is more elastic:

- Availability of other transport means
- Time preparation is long.
  Reduction is price is minimum but reduction in qty extension.

Simon @ 96890510 Email: simon@economicsfocus.com.sg

Other related areas of discussion

1) Identify the factors that contributes to the increase in production in the industry
2) Consider the impact on the car sales market when there is a reduction in the quota of cars due to reduction the number of COEs available and the occurrence of recession.
3) It is said that the supply of fish will be reduced extensively as result of the overfishing while there is a growing affluence which will lead to a rise in the demand for fish.
    a. Assess the impact of the above events on the fish market.