Q3

(a) Explain how the price mechanism allocates scarce resources in a free market. [10]

(b) Indirect taxes are sometimes imposed on goods and services in order to influence the pattern of consumers' expenditure. Discuss the view that when indirect taxes are imposed, it is always the consumers who have to bear a greater burden of the tax. [15]

(a) Explain how the price mechanism allocates scarce resources in a free market. [10]

In a free market, where there are unlimited wants (for goods and services) but are met with only limited resources (land, labour, capital & entrepreneurship), with demand and supply interaction, there is therefore a need to allocate scarce resources among alternative uses to satisfy the wants of different people.

As mentioned, price mechanism refers to the determination of prices through the interaction of demand and supply, where demand is the willingness and ability to pay for a good at every given price and supply is the willingness and ability to produce a good at every given price.

Using a DD/SS diagram to illustrate the following when there is disequilibrium (briefly):

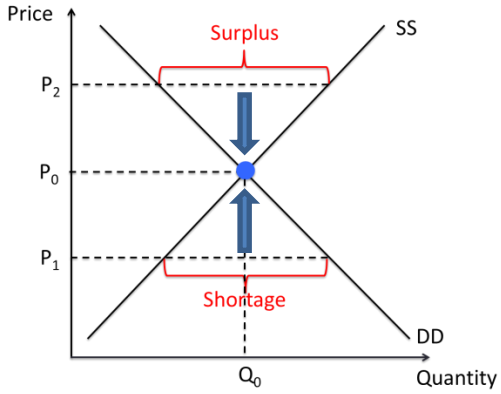


Figure 1: determination of price & quantity through price mechanism

- When price is below P_0, e.g., at P_1, $Q_d > Q_s$ => shortage => upward pressure on price
- When price is above P_0, e.g., at P_2, $Q_d < Q_s$ => surplus => downward pressure on price
- At P_0, Qd=Qs => market is cleared => equilibrium reached (no tendency for price to change) => equilibrium qty = Q_0

The price mechanism solves resource allocation (i.e. what & how much, how, and for whom to produce) by itself. It is with the understanding that no individual is required to be concerned about resource allocation in the economy as a whole; one need only worry about our own self-interest (producers: profit; consumers: maximum satisfaction given limited budget). And in this case, there is no government intervention required to coordinate resource allocation.

1. What and how much to produce

What and how much is produced is determined by the dollar votes cast by consumers which reflect consumers' willingness and ability to buy as reflected by each point on the demand curve. If many dollar votes are cast for a particular good, this means that buyers are willing and able to pay a relatively high price

for it. If production costs are equal, this higher price will signal producers to allocate more resources to produce the goods with relatively high prices to earn more revenue as well.

Referring to Figure 2 below, assume the initial demand for smartphones is represented by D_0. Assuming there is an increase in demand for smart phones due a change in taste and preference, a result of intense advertisement of the convenience of smart phones or an increase in income. D_0 will shift to D_1. Since consumers are able and willing to pay a higher price for smart phones at every quantity (D_1>D_0), this higher price will signal producers to allocate more resources to increase the production of rice so as to earn a higher revenue. The equilibrium quantity for smart phone now is greater than that before at Q_0 to Q_1.

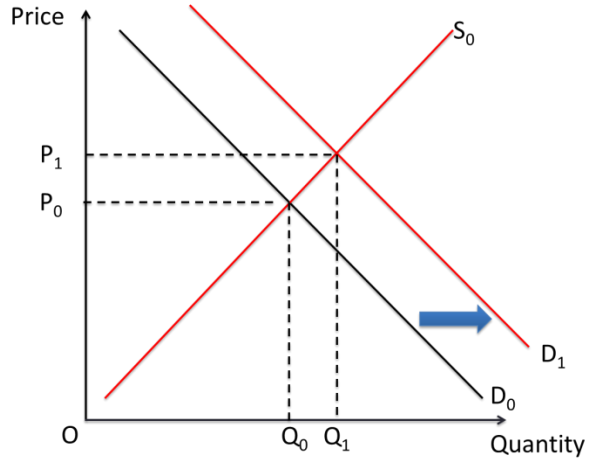


Figure 2: how demand affects resource allocation

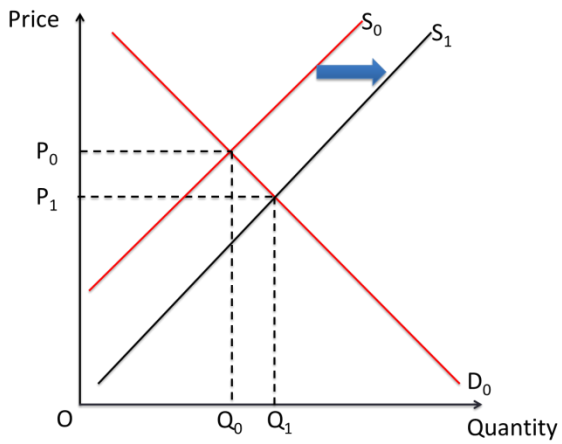


Figure 3: how supply affects resource allocation

Above that, what and how much to produce is also affected by producers' cost of production. If the cost of producing a good falls over time (e.g., due to technological advancement), it becomes more profitable for producers to produce the good, causing them to allocate more resources to the production of the good. Refer to Figure 3 above, as the cost of producing smartphones falls, supply increases from S_0 to S_1, leading to an increase in equilibrium quantity from Q_0 to Q_1 which means more resources are allocated to the production of smartphones.

2. How to produce

Price of factors of production acts as a signal to producers when deciding how to produce. The traditional aim of producers is to maximise profits. As such, they will seek for the lowest cost or least cost method of production. For instance, in Singapore whereby the price of labour has increased relative to capital, producers will use more capital intensive method of production. With least-cost method being employed in the production, productive efficiency can be achieved.

3. For whom to produce

Price (dollar votes) answers the questions of for whom the good should be produced for. In answering the resource allocation question of for whom to produce, resource allocation via the price mechanism is geared towards whoever can pay as shown by the demand diagram. This ability to pay is dependent on wealth and income. As such, the higher the income and wealth, the greater is the ability to pay and thus, more resources will be allocated towards this group of people. The poor are those who own few resources, which command low relative prices. Hence they can only afford a small share of the economy's output or even

none, as they may not have the ability to pay for the good. As such, they will not form part of the demand curve with no ability to pay and hence no good will be provided for their consumption as there is no dollar vote. However, there may be a need of the good for survival. In other words, in this case, in price mechanism, resources are allocated to produce mainly for the rich, who are the ones who are able to pay at any price on the demand curve. It means that there is a trade-off of efficiency which is equity.

This is evident from the production of bio-fuel to satisfy the wants of car owners. There was an increase in profitability in the bio-fuel market. To enable firms to produce more consumer goods, it worsened the global food shortage in 2008 as less agricultural products are produced in replacement with bio-fuel which commands greater profitability. Although price mechanism is capable of allocating resources efficiently in answering the question of what and how to produce, the question for whom to produce may not be answered in an equitable manner.

In conclusion, price mechanism is able to allocate resources efficiently by answering the questions of what, how and for whom to produce. However, it happens only if the conditions are assumed which may not hold in the real world. Moreover, as explained earlier, efficient allocation of resources does not ensures equity.

Knowledge, Application, Understanding and Analysis		
L3	Developed explanation of how the price mechanism allocates resources. The 3 economic questions are addressed.	8 – 10
L2	Undeveloped explanation of how the price mechanism allocates resources.	4 – 7
L1	Smattering of valid points	1 – 3

(b) Indirect taxes are sometimes imposed on goods and services in order to influence the pattern of consumers' expenditure. Discuss the view that when indirect taxes are imposed, it is always the consumers who have to bear a greater burden of the tax. [15]

An indirect tax is a tax on a good or service. It falls on the producers and thus increases the cost of production. However, it may be passed on to the consumer in the form of higher prices. As the impact of tax is on the person who bears it in the first instance, which refers to the producer here, the incidence of a tax is borne by the person who finally bears the tax. It may just be the producer or the consumer of both. The burden of the indirect tax falls on the buyers reflected by the price they now have to pay and on the sellers reflected by the fall in the post-tax price they receive. The extent of the actual incidence of the tax depends on the relative elasticity of demand and supply.

Price elasticity of demand is the responsiveness of quantity demanded due to a change in price, ceteris paribus, and price elasticity of supply is the responsiveness of quantity supplied due to a change in price, ceteris paribus.

When an indirect tax is imposed, the supply cure will shift upward by the full amount of the tax imposed. At the initial equilibrium price, there will be an excess demand of the food. This will cause the price of the good to rise and quantity to fall. These changes will occur until a new market equilibrium is attained with a higher equilibrium price and lower equilibrium quantity. As shown in the figure 1 below, when indirect tax is

imposed, supply curve will shift left from So to S1, the prices increases from P_0 to P_1 and quantity falls from Q_0 to Q_1.

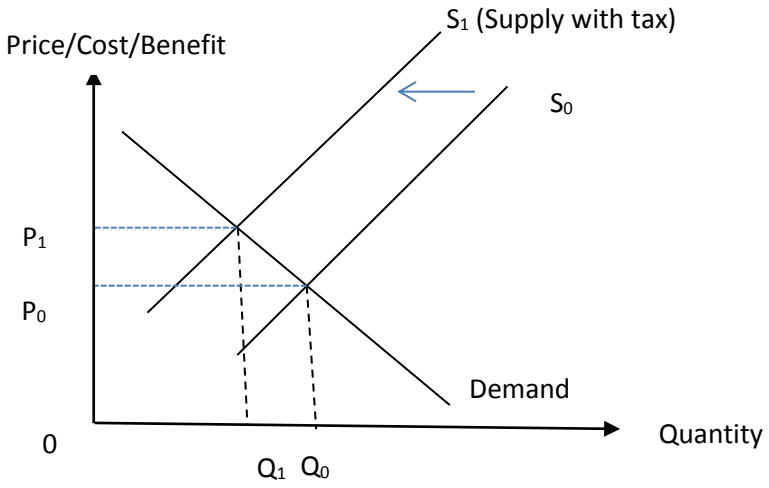
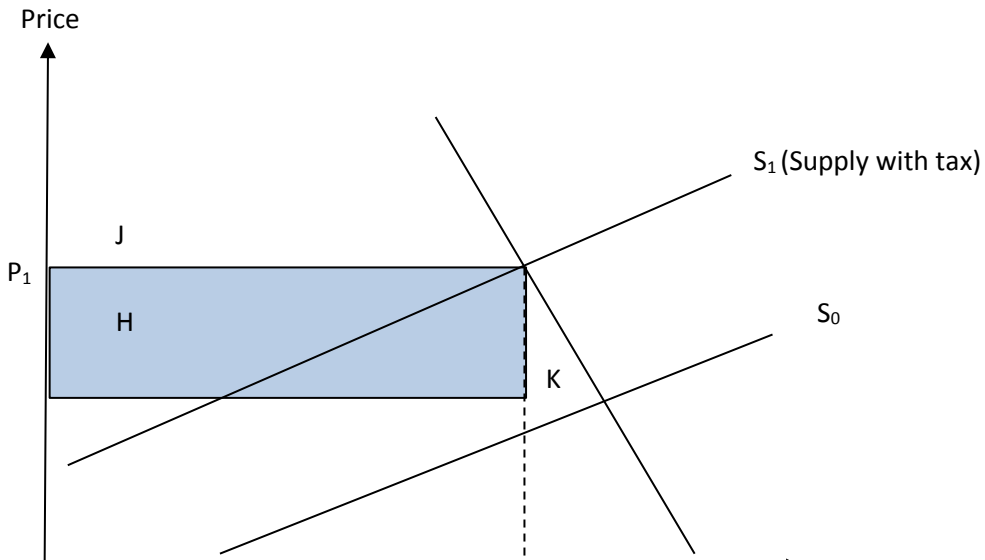


Figure 1

Thesis: consumers tend to bear a greater burden of the tax

Consumers tend to bear a greater burden of the tax in a situation where the value of its price elasticity of demand (PED) is less than the value of its price elasticity of supply (PES).

For a good such as cigarettes, its demand tends to be less price elastic than its supply curve. As cigarettes are a habitual and addictive good, its demand is price inelastic, while its supply tends to be more price elastic as cigarettes are non-perishable goods that allows it to be stockpiled in times of weaker demand. Hence, the suppliers can readily adjust the quantity supplied in the market according to the market demand and price signal. As such, with a lower value in PED compared to PES in the market for cigarettes, consumers in the cigarettes market will therefore tend to bear a larger tax burden while producers will bear a smaller tax burden.



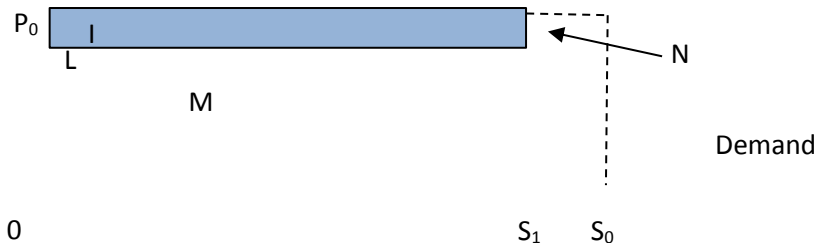


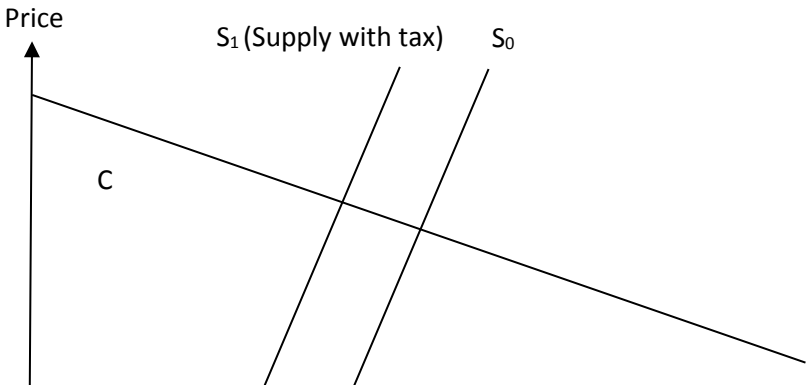
Figure 2

With reference to figure 2, prior to the indirect tax, consumers had a consumer surplus of areas J, H and K whereas producers had a producer surplus of areas I, N, Land M. After indirect tax is imposed, consumers surplus is reduced to area J and for the producers after the tax, their post-tax producer surplus is areas L and M. Area H and I will be the total tax revenue gained by the government, implying that there has be a welfare transfer of area H from the consumers to the government and area I from producers to the government. As can be seen, area H is larger than area I given the relatively more price inelastic demand nature than the supply of cigarettes. Therefore it can be said that the incidence of the tax has fallen more greatly on the consumer than the producer, and that the consumers will bear a greater tax burden. This is also reflects the theory that consumers tend to response less than proportionately to a rise in price when the good is price inelastic in demand. Hence it makes sense to pass on most of the tax burden to the consumers instead.

Anti-thesis: consumers tend to bear a lesser burden of the tax

However, consumers may not always bear a greater burden of the tax. Consumers tend to bear a lesser burden of the tax in a situation where the value of its price elasticity of demand (PED) is more than the value of price elasticity of supply (PES). This is largely due to consumer's tendency to be more responsive to price changes compared to producers; hence tax tends to be passed on more to producers in the event that PES value is lower than PED.

Take for an example, the market for fine wine. Fine wine are usually wine that is aged and kept for a long period of time. Its price is largely based on the significant time and condition that it is kept and old wines are often sold for extraordinary prices. As such, fine wine takes a large proportion of income and tends to be price elastic in demand. Any change in price will lead to a more than proportionate change in quantity demanded. However, the value of its PES will be much lower than its PED. It will be price inelastic in supply. This is due to the long storage period of time required before the fine wine is ready to be sold. As demand for fine wine is more price elastic than its supply curve, the consumers will then bear a smaller tax burden while the producers bear a greater tax burden.



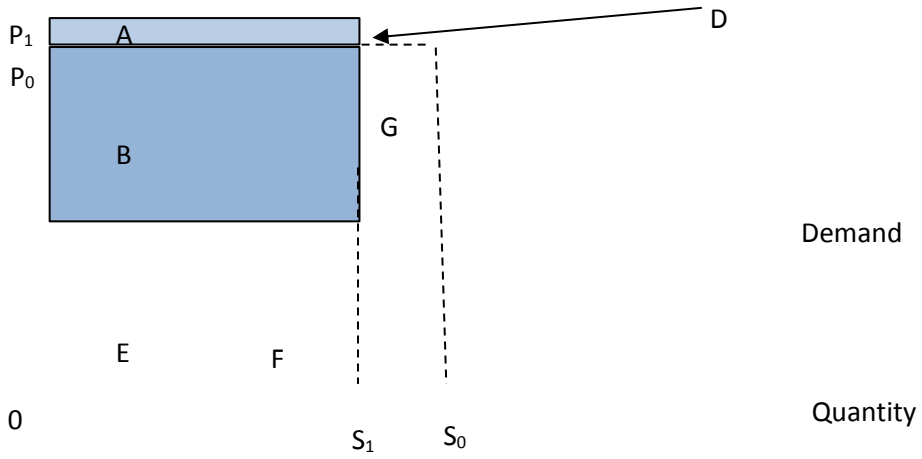


Figure 3

Prior to the tax, as seen in figure 3, consumers had a consumer surplus of A, C and D, whereas producers had a producer surplus of areas B, E, F and G. After the tax, consumers surplus is now reduced to area C and for producers, their post-tax producer surplus is areas E and F. The total tax revenue gained by the government is area A and B, implying that there has been a welfare transfer of area A from the consumers to the government, and area B from producers to the government. As can be seen, area B is larger than area A, given the price elastic nature of demand. Therefore the incidence of tax can be said to have fallen more greatly on the producer than consumers. This is because of the price elastic nature of demand of fine wine - consumers are extremely responsive to price changes. Therefore producers of the fine wine will have to bear the brunt of the price increase from the tax to carry on business.

Overall, when indirect taxes are imposed, dependent on the relative elasticity of PED and PES of the good, consumers may not always have to bear a greater burden of the tax. The greater the price elasticity of demand compared to supply, the greater the incidence on the producer instead of consumers. So when an indirect tax is imposed, it is not always the consumers that have to bear a greater burden of the tax.

Knowledge, Application, Understanding and Analysis		
L3	Developed explanation on how based on the different value of PED and PES, consumer's share of tax burden is different with examples.	9 – 11
L2	Undeveloped explanation how based on the different value of PED and PES, consumer's share of tax burden is different.	5 - 8
L1	Smattering of valid points	1 – 4