SRJC H2 CSQ 1 Suggested Answers

(a) (i) Using Figure 1, describe the trend in price of cobalt from 2013 to 2017. [1]

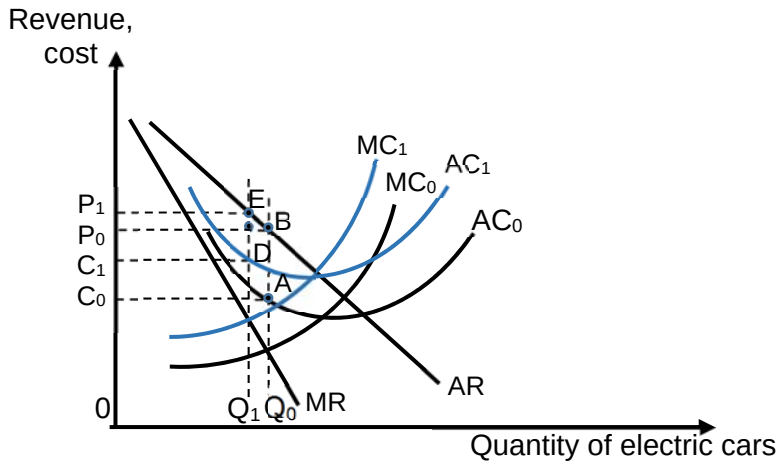
The price has generally **increased** over the period.

(ii) With reference to Extract 1, using a supply and demand analysis, explain how falling prices of copper and nickel have contributed to the change in price of cobalt observed in (a) (i). [3]

Cobalt is produced as a "**by-product**" from nickel meaning it is produced in **joint supply** with nickel and copper. This means when there is an increase in copper and nickel production, there will be a simultaneous increase in supply of cobalt. When prices of nickel and copper fall, there is a fall in quantity supplied of these metals as profits fall. Hence, mines shut down. This leads to a fall in supply of cobalt, causing a shortage that leads to an increase in cobalt prices as observed in a(i).

(iii) Explain with the aid of a relevant diagram, how the level of profit of a producer of electric cars is likely to be affected by the change in price of cobalt. [3]

Cobalt is a raw material used in producing rechargeable batteries which are used in electric cars (extract 1). As such, when cobalt price increases, the price of the batteries increases which in turn increases the cost of electric cars. This cost is a variable cost since the number of batteries and thus cobalt needed varies with the number of electric cars produced. This means both the marginal cost (MC) and average cost (AC) increase. MC and AC curves will shift from MC_0 to MC_1 and AC_0 to AC_1 respectively. Assuming the electric car firm is a profit-maximising firm, its output level falls from Q_0 to Q_1 and price increases from P_0 to P_1. As demand is price elastic, the rise in price leads to a more than proportionate fall in quantity demanded. Hence the firm's total revenue falls. As profit is the difference between total revenue and total costs, the rise in cobalt prices will result in a fall in total profit of the car firm from area P_0C_0AB to area P_1C_1DE.



(b) Discuss whether government subsidies in the market for electric cars would help or hinder the attainment of economic efficiency in resource allocation. [8]

Answer

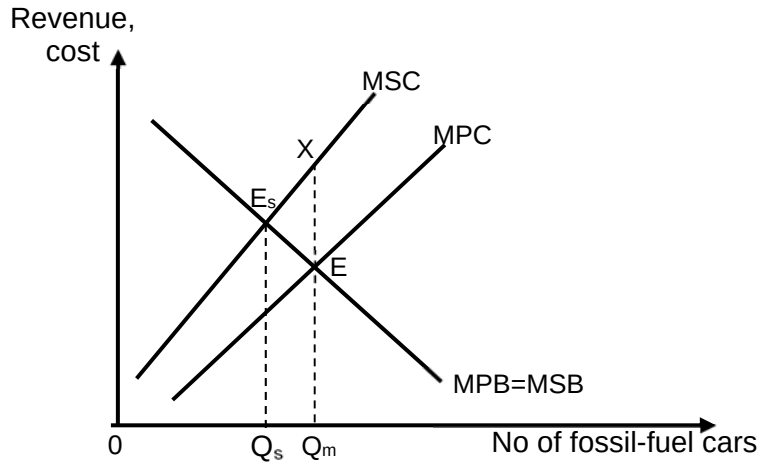
Introduction

Efficiency in resource allocation refers to a situation in which it is impossible to make someone better off without making someone else worse off. In the market, economic efficiency is attained when marginal social benefit (MSB) equals to its marginal social cost (MSC).

Body

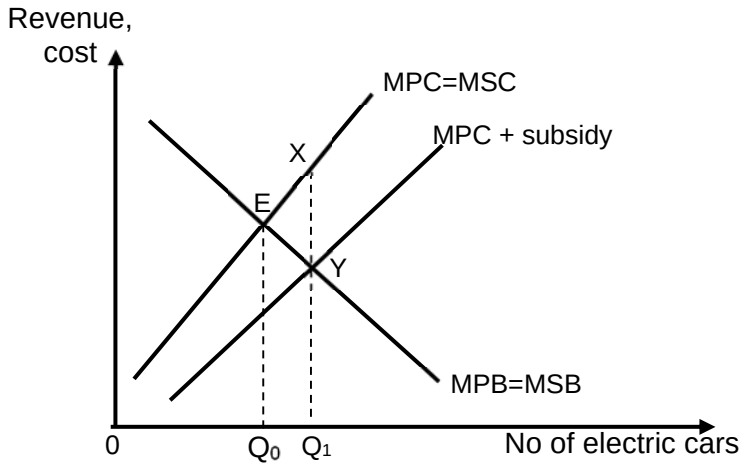
Some governments like in Norway and China subsidises electric cars in order to encourage its consumption through lowering price. This is aimed at reducing the level of pollution in the country and hence achieving a more efficient allocation of resources in the market for fossil fuel cars.

In the market for fossil-fuel cars, there is negative externality which refers to the costs to the third party who are not directly involved in the production and consumption of the good and they are not compensated for the costs they incur. This negative externality causes a divergence between the marginal social cost (MSC) and the marginal private cost (MPC) of car usage. The marginal private benefit (MPB) to the car users include value of time saved and comfort of travel by car. The market equilibrium level of consumption is $0Q_m$ where car users consider only the private benefits and costs. However, the social optimal level of consumption is $0Q_s$ where all costs, including external costs as well as external benefits are taken into account. There is thus overconsumption of Q_mQ_s of cars and this results in a deadweight loss to the society – area E_sEX. This deadweight loss is a result of the excess of MSC over MSB for each additional unit of the good consumed between Q_m and Q_s.



When the government gives a subsidy to electric cars, it will lower the price of electric cars. Consumers will switch from fossil-fuel cars to electric cars as electric cars are relatively cheaper now. Hence, there will be a fall in the consumption of fossil-fuel cars which will also reduce/remove the deadweight loss as a result of over-consumption of such cars. So a subsidy for electric cars help to attain efficiency in resource allocation such as the right amount and type of cars are consumed.

This same subsidy however, can also hinder efficiency in the market for electric cars itself.



Assuming there is perfect information and no externality in the electric car market, the market equilibrium output and price as determined by MPB=MPC will be socially optimal level since MPB=MSB and MPC=MSC. This occurs at output $0Q_0$. However, with the government subsidy that lowers the cost to the producers, the new equilibrium output is $0Q_1$. This output level is now greater than $0Q_0$. With this intervention, the output of electric cars now will be more than social optimal. Hence, there is a welfare loss of area EXY as the MPC>MPB (or MSC>MSB) for each additional output that exceeds $0Q_0$. Worse, these firms do not really need help or support by the government as they are profitable in themselves as mentioned in the extract.

Conclusion
The subsidy for electric cars may be needed to reduce the problem of over-consumption in the fossil-fuel car market i.e. subsidy helps to attain efficiency, especially in the short-run. However, in doing so, the government is distorting the electric car market as the subsidy encourages over-production and hence welfare loss. In view of this, the government needs to think about the right level of subsidy.

(c) With reference to Extract 3, explain the reasoning that underlie the Chinese government's automobile industrial policy that is "weighted towards scale expansion" and comment on the extent to which this policy has helped to improve the international competitiveness of China's car industry. [5]

Chinese government is trying to enable its infant car industry to grow when it is "cultivating domestic enterprises". It is likely that this policy helps firms to produce at a greater output level so that they may enjoy economies of scale. This lowers its long run average cost of production as more cars are produced. The firm can then lower its price to increase the quantity demanded for Chinese cars assuming that demand for China's car exports is price elastic, which is likely to be the case because of the many available substitutes for Chinese cars. Hence scale expansion increases the competitiveness of China's car industry.

This policy is likely to have succeeded to a limited extent in improving the competitiveness of China's car industry as Extract 3 mentions that China exported less than 5% of locally produced automobiles and this is further declining.

A likely reason for this is that Chinese cars are unable to compete based on quality and it is difficult for them to break into a market that may have strong brand loyalty. Consumers of cars may already have formed a brand loyalty to either German or Japanese cars because of the qualities that they possess. This perceived quality of such cars makes it difficult for Chinese cars to gain a larger market share because they are seen as inferior in quality to the more established car brands.

(d) With reference to the case material provided and your own knowledge, discuss whether on balance, the Chinese government's decision to open up the market for cars in the country to foreign investments will be beneficial to consumers, producers and the government. [10]

The Chinese government announced the scrap of the 50% foreign investment cap on joint ventures by 2022. This lowering of barriers to entry by foreign firms into the Chinese car market will be beneficial to consumers, the government and foreign producers. However, local producers are likely to be negatively impacted. Whether the policy is beneficial overall depends on how wide the impact is on the different economic agents and whether there are possible measures to mitigate the negative effects of the policy.

Chinese consumers are likely to benefit from this policy in terms of lower prices and greater variety. A local producer faces the cost and revenue conditions shown in the Figure 1 below.

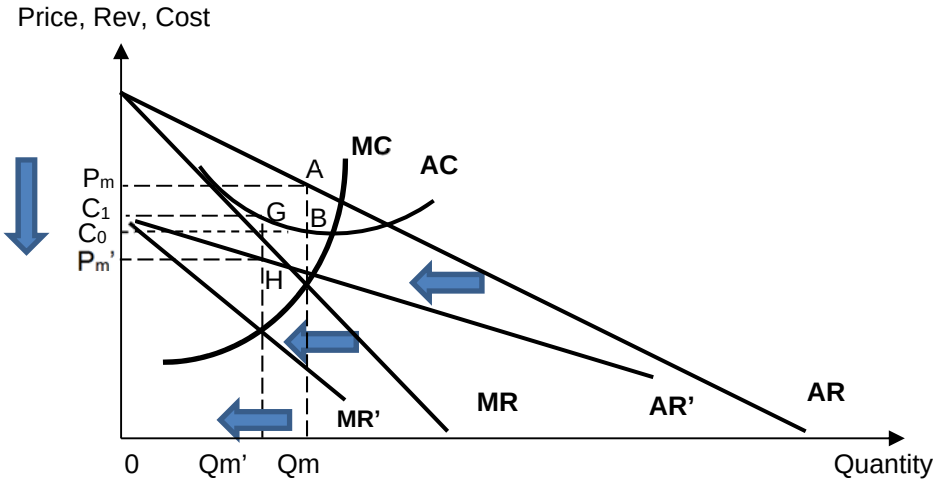


Figure 1: A Chinese car manufacturer's cost and revenue conditions

Consumers now have more options of car brands to choose from and so will reduce their demand for a given local manufacturer's cars. This is seen in the leftward shift of the Average Revenue (AR) curve along with its Marginal Revenue (MR) curve. The reduced demand will lead to a fall in prices for the firm's cars (from Pm to Pm') that consumers get to enjoy.

Furthermore, with the entry of new firms into the market, consumers are able to enjoy a greater variety and quality..

The government, representing society, also benefits from the liberalisation of the Chinese car market in terms of economic growth due to an increase in foreign direct investment. This leads to an increase in aggregate demand which in turn leads to a multiple increase in national income through the multiplier process.

However, local producers are likely to suffer a loss in profits. The initial supernormal profits of these firms, as seen in figure 1, is the area P_mABC_0. However, as mentioned, their demand falls and these leads to a fall in the price and quantity of cars sold. This leads to a fall in profits and it can even become subnormal profits of area C_1GHP_m'. Furthermore, Extract 4 mentioned how these local firms are likely to be complacent because of the joint venture policy. Thus,

they are unlikely to be productively efficient and their higher costs will further worsen their profits.

On balance, it seems that it is more beneficial than not to implement the liberalisation policy since it benefits consumers and the government in terms of reaching its goals. However, this is also dependent on the impact on the local producers who lose profits. A substantial fall in profits for the Chinese firms could lead to an eventual shut down of the firms and would result in a fall in derived demand for the labour, leading to higher levels of unemployment in the country.

Suggested Mark Scheme:

Levels	**Descriptors**
L2	• Excellent explanation with good economic detail of both the positive and negative impacts of liberalisation on the different agents. • Answer is well applied to the Chinese context. • Logical, coherent arguments made and points are well organised.
L1	• Smattering of ideas • Answer is disorganised and lacking in clarity • Only 1 agent is addressed. • 1-sided argument.

Evaluation	**Descriptors**
E2 (2-3)	• Provides a reasoned conclusion as to why on balance, the policy is beneficial based on the impact of the costs and benefits.
E1	• States overall stand of whether on balance, the policy is beneficial or not. • Unjustified conclusion.