Raffles Institution

Nurturing the Thinker, Leader & Pioneer

ECONOMICS

Higher 2

Syllabus 9757

Examiner's Report

Year 5 Promotion Examination 2020

TEL: 65 6419 9888 ● FAX: 65 6419 9898
http://www.ri.edu.sg ● One Raffles Institution Lane, SINGAPORE 575954

ECONOMICS

Y5 H2 Promotion Examination 2020

Paper 9757/01
Paper 1

Case Study

(a) (i) Explain the market structure that best represents ride-hailing services after the merger in Extract 1. [2]

Suggested Answer:

Identification

The market structure is monopoly.

Justification (Link it back to the characteristics of a monopoly)

(i) There is only one dominant firm with a very high market share and the rest are small firms with insignificant shares.

Evidence: "CCCS finds that Grab currently holds around 80% market share. Despite recent entry by several small players, their market shares remain insignificant." (Extract 1)

OR

(ii) Very High BTE

- Grab controls the factors of production i.e. the taxi drivers who are essential for its business. It would be difficult for a potential entrant to convince drivers to switch if the customer base of the new entrant is small.
- Grab enjoys the network effect from its booking app which leads to customers remaining loyal to enjoy their rewards and shorter wait times since there are more drivers in Grab's network compared to a potential entrant.

Evidence: CCCS's investigation found that strong network effects make it difficult for potential competitors to scale and expand in the market, particularly given that Grab had imposed exclusivity obligations on taxi companies, car rental partners, and some of its drivers. Grab's exclusivities hamper the ability of potential competitors to access drivers and vehicles that are necessary for expansion in the market. (Extract 1)

Mark Scheme

- *Identification – 1m*
- *Justification - 1m*

Examiners' Comments

- *Relatively well-done with most scoring at least 1m for the correct identification.*

- *A number of students did not gain the second mark as they did not justify why it is a monopoly with links back to the characteristics of the market structure. They stopped short of mentioning that the remaining firms in the market were small and insignificant, and that there is only 1 dominant firm in the market after the merger.*
- *Note that it is not good enough to say that Grab is a monopoly after the merger because it held the majority share in the market, as this can also be evidence of an oligopoly.*
- *A small number did not respond to the post-merger scenario and case evidence on the market share and got the identification wrong.*

(a) (ii) Comment on how commuters could be affected by the merger above. [4]

Suggested Answer:

Consumers' welfare could be negatively or positively impacted by the merger. Consumers would be affected firstly by the price charged but also by other factors such as quality and choice.

Thesis: Negative Effects

1. Higher price

- The merged firm has larger market share ➔ demand (AR) shifts right.
- There are fewer firms in the market. Grab is now a monopoly ➔ there are fewer substitutes ➔ PED falls and the new demand curve is steeper.
- At the new profit-maximising output where MC=MR, the new profit maximising price is higher. Consumers are exploited because price charged exceeds the MC by a greater extent.
- Hence they are worse off.

Evidence
"Effective fares have increased between 10% and 15% post-Transaction." Extent of this: will worsen, as grab continues to erect BTE with its market dominance- "exclusives…" (Extract 1)

2. Less Choice

- Since there are a fewer number of firms and Grab is a monopoly, consumers lose their sovereignty.
- This could also lead lower quality of service for rides provided by Grab.

Anti-thesis: Positive effects

1. Dynamic Efficiency

- Higher profit from the merger gives Grab the ability to do R&D for e.g. in autonomous vehicle technology.
- Consumers have better quality/more efficient travel experiences in the long-run.

2. Lower price

- Grab's expansion will enable it to enjoy internal economies of scale for e.g. in the bulk purchases of vehicles. They could pass down cost savings from iEOS to consumers through lower prices.

Or

- Process innovation over time due to dynamic efficiency might cause the LRAC/LRMC to fall leading to lower prices in the long-run.

Mark Scheme

- *Balanced answer with use of case material and elaboration – 4m*
- *Well explained one-sided answer – max 3m*
- *Lack use of case evidence – max 3m*

Examiners' Comments

- *"Comment" requires a balanced answer or an attempt at evaluating the thesis. There were many one-sided responses. Students need to pay attention to the command words to guide their approach to the question regardless of mark allocation.*
- *The analysis on the extent of increase in prices lacked rigour. Reference should be made to the change in PED and extent of the price mark-up above the MC with a merger.*
- *Some scripts looked at the outcome of a monopoly e.g. high price, P>MC as compared to P = MC, rather than the change that occurs with a merger e.g. increase in the extent of price-setting ability → higher prices*
- *A number of students did not apply case evidence to support their answer and lacked application. Note that it is a case study, and you should use case material whenever possible.*

(b) Discuss the extent to which Uber is likely to benefit from the development of autonomous self-driving technology. [8]

Suggested Answer:

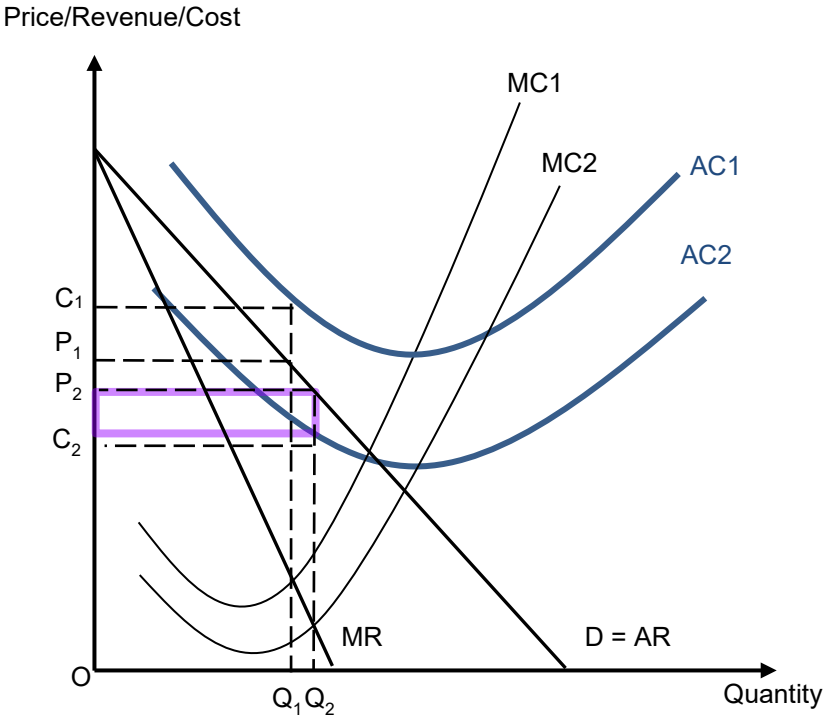
Assume that Uber is a profit-maximizing firm, and would like to increase profit levels as its objective → Evidence: Uber's CEO's goal is to get Uber to profitability by 2021 (Extract 2).

Thesis: Uber is likely to benefit from autonomous technology (AT) → it could lead to higher profits

1. Lower Cost

- 'The driver represents the single largest expense in non-autonomous ride-sharing at 80% of the total per mile cost'. (Extract 2)
- The removal of the driver reduces the average variable cost of the trip i.e. the payment/wage of the driver.
- This will lead to a fall in both the MC and AC.
- The profit-maximising output increases to Q_2 and price falls to P_2 as shown in Figure 1 ➔ "by removing the driver from the equation…dramatically lower the cost of a ride" (Extract 2), "vehicle ownership becomes obsolete" as they switch to Uber's ride services.
- Hence Uber's profit increases as seen in the supernormal profit earned.

Figure 1



2. Higher Revenue

- AT would influence the tastes and preferences of consumers toward self-driving cars.
- 'Better indicates making the ride a luxurious experience while reducing customer wait times. To this end Uber, partnered with Volvo and Toyota to co-engineer what could be the most "opulent" self-driving ride experience on the market.' (Extract 2)
- This would increase demand (AR). The product differentiation is likely to reduce substitutability, lowering the PED and CED.
- This will lead to an increase in profit-maximising price and output, TR and profit.

<u>Antithesis: Uber may not benefit from autonomous technology → Profit might not increase or it could fall</u>

1. Safety Concerns – Fall in demand (AR)

- Tastes and preferences could be affected by accidents.
- The government might also regulate Uber if they deem AT to be dangerous.
- 'The most important for Uber's ATG unit, is safety, which could make or break the company's self-driving ambitions. Regulators could also cause delays over safety concerns.'(Extract 2)
- The fall in AR due to changing perceptions of safety or unintended regulation by the government will reduce the profit maximising price and output ➔ TR falls, profit falls.

2. Competition (Low/No increase in TR)

- If other firms are more successful at product differentiation based on their AT e.g. Waymo or if they develop it before Uber, the demand of Uber's driverless rides be lower than what was expected.
- 'But competition is building fast around the company with Waymo, GM and several others all working on self-driving technology.' (Extract 2)
- Revenue for Uber's service might be lower than anticipated → profits might not increase significantly or given the high cost of R&D, the increase in TR may not be sufficient to cover the increase in TC and profit levels may fall.

3. High cost of developing AT

- The fixed cost of developing AT from R&D is high
- Extract 2: "technology has to pass through three stages", "a goal that is still ways off", regulators could cause delays over safety concerns"
- This increases AC and reduces profit in the short-run, and already Uber is a "money losing ride hailing platform" → it may not survive if the sub-normal profits are significant and if the company is not able to raise enough funds for its investments.

Conclusion and Overall Evaluation

- In the short term, this is not likely to benefit Uber because it will experience teething problems in the adoption of AT and possible delays due to regulatory concerns → Uber is likely to incur costs without reaping sufficient benefits.
- However, Uber is likely to benefit from higher profit in the long term if the development is a successful one and they are able to boost its addressable market and incurs lower costs
- Extent of success in the long-term also depends on Uber's ability to differentiate its product from its rivals. Uber is likely to have an edge over its rivals because it has data on usage patterns of consumers from its UberX app, and could be more cost-efficient, and able to capture greater market share.
- Any other insightful points.

Mark Scheme:

Knowledge, Application, Understanding, Analysis		
L1	▪ *Smattering of points not directly linked to question* ▪ *Descriptive without the use of an analytical framework or incorrect framework used, i.e. demand and supply analysis instead of firm profit maximising analysis.* ▪ *Conceptual inaccuracies* ▪ *No case material*	***1 - 3***
L2	▪ *Good scope (revenue, cost) and balanced arguments.* ▪ *Applied firm profit max framework to analyse the effects.* ▪ *Good application of case evidence.*	***4 - 6***
Evaluation		
E1	*An unexplained or weakly supported or ambiguous judgement.*	***1***
E2	*A well-reasoned judgement.*	***2***

Examiners' Comments

- *Most students were able to recognize the requirements of the question and gave a balanced answer, and this shows that interpretation skills have improved!*
- *A number of students used demand and supply analysis even though the question was on Uber, a firm. Note that you should be applying the firm-level analysis for this question. There were also some students who started off well by applying the firm-level analysis for cost, but switched over to the DD/SS framework when looking at changes in revenue, which was odd.*
- *There were also some responses that lacked an analytical framework altogether. These largely descriptive responses also tended to lift case material without much explanation and application of economic concepts, and links to revenue, costs and profitability.*
- *The removal of the driver reduces both the AC and MC, since it is a variable cost. Many students simply shifted the AC without shifting the MC and inaccurately depicted the changes in profits.*

(c) (i) Describe the trend of electric vehicle (EV) sales volume in the US from 2012 to 2018. [2]

- Students are required to identify the overall trend in sales volume, and a refinement of the trend.
- In general, sales volume of EV cars increased from 2012 to 2018, with the exception of 2012 where sales volume fell or
- Other acceptable responses:
    - Sales volume of EV cars increased over the period at a fluctuating rate or
    - Sales volume of EV cars increased over the period with largest increase in 2012

Mark Scheme

- *Correct interpretation of overall trend - 1m*
- *Correct interpretation of refinement - 1m*

Examiners' Comments

- *The response to this question was mixed. Some described the trend accurately and succinctly, while others described year to year changes without stating the overall trend. Do keep it simple for 2 mark trend-type questions – identify overall trend, and give a refinement of the trend.*
- *A fair number of students did not identify the trend correctly as they did not pay attention to axis in the chart which showed % change. Do note that a positive % change means that sales volume has increased from the previous year, while a negative % change implies that the sales volume has fallen from the previous year.*

(c) (ii) Using economic analysis, account for the overall trend. [4]

- Students are required to identify and explain 2 factors that will cause an increase in quantity of output.
- DD increase + SS increase→ reinforce the increase in output or sales volume
- Demand increased due to increase in price of substitute vehicles as consumers switch away from conventional vehicles to electric vehicles
    - Ext.4: Conventional SUVs and light trucks were the most popular vehicles in America accounting for 70% of sales. They also got <u>more</u> expensive, an increase of 2% compared to last year.

- Supply increased due to fall in cost of production, which leads to increase profitability → incentive firms to step up production and increase SS.
    - Extract 4: Cheaper batteries, more models, and economies of scale as manufacturers ramp up assembly lines will continue to drive down EV prices and spur demand (Qd)
- Briefly explain market adjustment process and how the increase in SS and DD reinforce the increase in sales output. Increase in supply and increase in demand and assume increase in SS > increase in DD → surplus at the prevailing price level→ downward pressure on price → as price fall, qty demand increased while qty supplied fall until new equilibrium achieve where output / volume of EV cars increased.

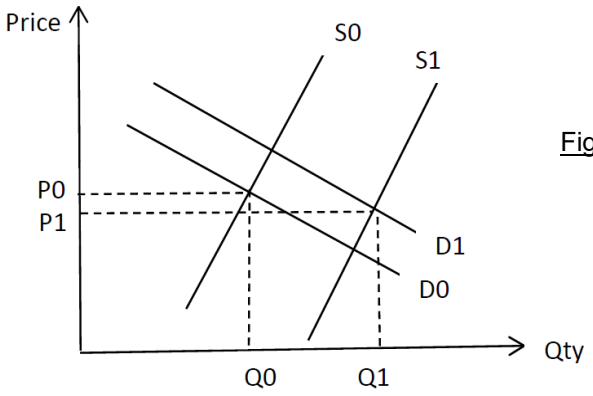


Figure 2: Market for Electric vehicles

Mark Scheme

- *Explain a demand factor and supply factor with use of case material and links to Qty traded – 4m*
- *Only DD or SS factor explained – max 2m*
- *No application of the case material – max 3m*
- *No linkage to output / Quantity traded – max 3m*

Examiners' Comments

- *A fair number of students were unable to get full credit for this question as they identified the trend in c(i) incorrectly, and as a result of that, the explanation of the factors (which was taken from the case material) was contrived and unconvincing.*
- *A good number of scripts lacked scope of explanation where either demand OR supply factor was explained, but not both.*
- *For those students who did identify 2 relevant factors, some lacked depth of elaboration of the factors – where case material was stated but not explained, and where there was lack of links back quantity traded → sales volume.*
- *Given that the focus of the question was to explain the "overall trend", some students unnecessarily spent time on explaining the refinement, be it the anomaly, or the year-on-year changes. Do highlight the key words of the questions before you start to answer the question to prevent time wastage in future.*
- *A number of students made a conceptual error as they did not correctly distinguish between demand and quantity demanded → they claimed that the fall in price of EVs increased the demand (and shifted the demand curve), when it should have been a change in quantity demand instead (where there is a movement along the DD curve with a change in price). These same group of students were not able to identify SS side changes that caused the fall in price in the first place.*

- *There were also some students who interpreted sales volume as total revenue, and spent time applying elasticity concepts. Do note that while it is possible for "sales" to be total revenue, "sales volume" means quantity.*

(d) Extract 3 mentions that usage of internal combustion engine (ICE) vehicles has resulted in worsening air quality.

Discuss whether subsidising electric vehicle (EV) is appropriate to correct the market failure the above. [10]

Introduction:

- Define market failure and clarify market failure in the Internal Combustion Engine (ICE) car market→ negative externality in production
- Clarify subsidy on EVs: indirect subsidy that is levied on the sellers/distributers of EV cars.
- Clarify what it means by appropriateness: effectiveness in solving market failure, feasibility and sustainability, and desirability.

Thesis: Subsidizing the use of electric vehicle (EV) is appropriate

1. Explain negative externality associated with usage of ICE vehicles

    - The use of ICE vehicle generates negative externality in production (Extract 3: A switch to EVs could help Singapore significantly cut its level of emissions and pollution) and deteriorate the health of third-parties whom do not received any compensation → marginal external cost is positive (MEC >0).
    - The negative externalities of pollution arising from production of ICE car journeys causes a divergence between private marginal cost (eg. cost of petrol) and marginal social cost as ICE car motorists do not take into account the negative externality generated in their decision-making.

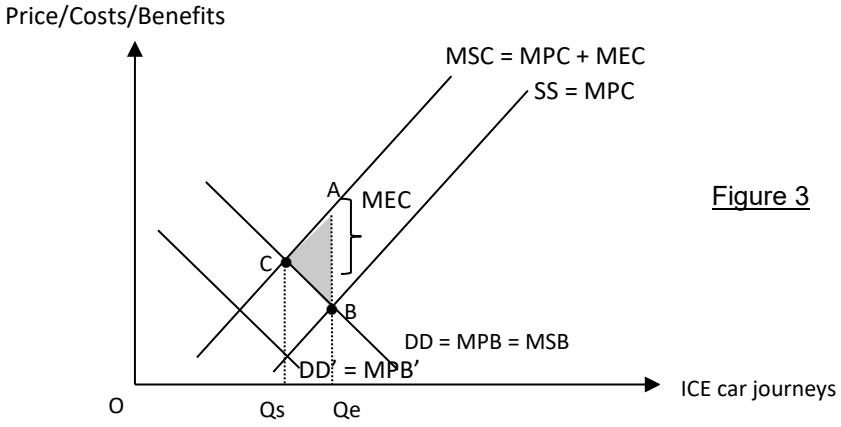


Figure 3

    - From Figure 3: Assuming no externalities on the consumption side, the MPB is equal to the MSB. In the free market, based on self-interest, the amount of ICE car usage is Qe where MPB = MPC because ICE car motorists will equate their private costs to private benefits in deciding on the amount of car usage. However, the costs to society is greater than private costs because of pollution and the resulting health hazards caused to third parties who are not accounted for as private ICE car motorists do not factor in these external costs in their decision-making. The optimal

level of production of ICE car journeys should be at Qs, where the marginal social costs (MSC) equals the marginal social benefits (MSB). Thus, when left to the free market, there is over-production of ICE car journeys which leads to market failure and for every unit of ICE car journeys over-produced of QeQs, social costs exceeds social benefits, resulting in DWL given by area ABC.

2. Explain how subsidy results in reduction in MEC from usage of Internal Combustion Engine (ICE) vehicles → fall in allocative inefficiency and DWL
   - Electric vehicles are substitutes for ICE vehicles as they serve the same function in a car journey → CED>0.
   - When government gives an indirect subsidy to electric cars sellers, it acts like a fall in cost of production and increases supply and in turn lower price of electric cars. Consumers will switch away from ICE cars to electric vehicles (Qd for electric vehicles increase) as electric vehicles are relatively cheaper now. Hence, there will be a fall in the demand for ICE cars which reduces the demand of ICE car usage → DD falls to DD' or MPB falls to MPB'. So where the MPB' = MPC → Qs.
   - Hence, the fall in demand for usage of ICE vehicles will reduce pollution levels and market failure as output falls to Qs → reducing deadweight loss to the society as output is brought closer to socially optimal levels.

   Note that in this context, it is equally acceptable for students to explain the subsidy as a direct subsidy to buyers which results in their increased willingness and ability to buy EVs, and thus switching away from ICE vehicles.

Anti- thesis: subsidizing the use of electric vehicle (EV) may not be appropriate.

1. <u>Effectiveness</u>:
   - ICE and EV cars maybe weak substitutes to each other i.e low CED and a fall in the price of EV may only result in a less than proportionate fall in demand for ICE cars→ hence in the market for ICE cars, MPB and output may not fall to desired socially optimal levels.
     - Extract 3: " there is still not a wide enough variety of EVs to meet the demands of motorists...most buyers looking out for sports utility vehicles … instead of the "niche" models automakers offer"
     - Driving EVs could be more inconvenient due to lack of charging points at the moment, as compared to hundreds to petrol stations around the island.
   - Lump sum tax imposed may offset subsidy → hence, overall cost of EV car may not fall and hence, may not result in a fall in price and an increase in Qd.
     - Extract 3: "government introduce a six-monthly lump sum tax for EVs from 2021"
   - Poor receptivity or take up rate of purchasing EV cars / PED<1 due to lack of good substitutes→ Poor infrastructure support – lack of charging points at the moment → less than proportionate increase in Qd in response to fall in price (Ext 3)

2. <u>Feasibility and sustainability (LR)</u>: High cost of financing the subsidy and infrastructure cost to support greater usage of EVs → may not be sustainable in the longer run
   - Extract 3: 45% subsidy of car's additional registration fee – up to $20k per vehicle
   - High cost of infrastructure - Extract 3: creating 28,000 charging points, a significant infrastructure surge from the 1,600 → high opportunity cost as less resources can be allocated to production of other goods eg. merit / public goods; drain on government reserves
   - Loss in government revenue from fuel excise duty (Ev: but may compensated with lump sum road tax levied on electric vehicles as inferred from Extract 3)

Conclusion and Overall Evaluation:

- The subsidy for electric cars will encourage more people to switch from ICE vehicle usage to EV car usage and thus, reduce the over-production of ICE car journeys and problem of pollution, and solve market failure.
- This is likely to be effective in the longer run when consumers are given time to change their tastes and preferences towards EV, and when more charging ports are made available to support the usage of EVs.
- However, government needs to be mindful of the possibility of govt. failure from imperfect information and review the optimal level of subsidy for electric vehicles to prevent over / under subsidizing → inefficient allocation of resources in the market for ICE car journeys could still result.
- Suggest and explain an alternative policy and evaluate the alternative/complementary policy. e.g. In the LR, alternative policies such as education and mindset changes (DD factor) is still pertinent as behavioural change is required for sustainability in cutting down the use of ICE vehicles and pollution. *Can also suggest alternative polices that is more directly targeted at ICE car usage such as indirect taxes eg. Petrol tax on usage of ICE cars; quotas on ICE cars can be complemented with the subsidies for EV.*

Mark Scheme:

Knowledge, Application, Understanding, Analysis		
L1	• *Journalistic style of explanation; did not link to economic theory or framework* • *Glaring conceptual errors* • *Listing rather than explaining how subsidy works and how it helps correct market failure in the ICE car market*	***1-4***
L2	• *Show depth of explanation/elaboration and sufficient scope of coverage. Uses economic theory to explain:* ➢ *How the market failure source in the ICE market leads to inefficient allocation of resources given the case material provided <u>and</u> why subsides on EV will lead to more efficient allocation of resources in the ICE car market.* • *Explains the limitations (at least 2) associated with the use of subsides in the EV market*	***5-7***
Evaluation		
E1	• *Evaluation without much / little explanation or a summary of earlier arguments*	***1***
E2	• *Evaluative point(s) are explained and insightful.*	***2-3***

<u>Examiners' Comments</u>

- *Some students did not adequately explain the market failure in ICE vehicle usage before explaining how the policy will address the market failure. Students should note that for questions on policies, especially if there was no prior question which required you to explain the problem, you should always start off establishing the problem first before discussion of the policy.*
- *A good number of students explained market failure in the EV market instead of the ICE vehicle market where it was stated clearly in the preamble that there is where the market failure is. There*

was also another group of students who simply explained how the subsidy on EV works and its limitations, without application back to market failure in the ICE vehicles was not clearly developed.
- *Far too many students only looked at subsidies having high opportunity cost, without first addressing the effectiveness of the subsidy to address market failure. Appropriateness of the subsidy measure on EV was largely theoretical and there was weak application to the context of case material.*
- *Some conceptual gaps in analysis with respect to the DWL area was observed in a few scripts and an explanation of the negative externality associated with ICE car usage was vague.*
- *There were also handful of scripts who did not support their arguments with case evidence.*

Paper 9757/02
Paper 2

Essays

Question 1

Singapore is looking to the domestic-tourism market to drive recovery in its hard-hit tourism sector as the coronavirus pandemic choked the lifeblood of international visitors. Some $45 million has been set aside for a nine-month campaign touting "mini-holidays" for locals – including in districts such as Chinatown, Little India, Orchard Road and Sentosa.

Source: The Business Times, 22 July 2020

Discuss possible policies to drive the recovery of the market for tourist attractions and a related market in the "hard-hit tourism sector". [25]

Suggested Answer

<u>Introduction</u>

- Objective - set the context regarding the hard-hit tourism sector.
- Define what recovery of market means.
- Related market to trourist attractions could be the F&B market.

The coronavirus pandemic has led to the closure of international travel borders between countries. This would mean that the tourism market has lost effective demand for tourism services which is majorly sustained by tourist visits to Singapore.

  - This fall in demand has led to significant losses of revenue for firms within this market.
  - If no policies are put in place by the government to help firms within the tourism sector recover, (i.e. firms earn revenue greater or equals to variable costs in the short-run and firms earn at least normal profits in the long run), they will shut-down and exit the market in the long-run and the tourism sector will see significant decline.
  - This will lead to siginifcant loss of Gross Domestic Product (GDP) for which tourism contributes to 4% of receipts earned from all sectors in the economy.
- While short-run government policies are necessary to keep companies afloat, in the long-run however, international borders will eventually have to be open for the continued recovery and thriving of this sector, i.e. what we see happening now as reciprocal green lanes for business and official travel between Singapore and other countries.

Body

Objective 1: Analyse the impact of the pandemic on the tourism sector, and hence the market for tourist attractions.

Assume a perfectly competitive market for simplicity of analysis.

- With the closure of Singapore's borders to tourists, effective demand for services in the tourism sector, and particularly for tourist attractions fell dramatically.
- There is also a fall in SS of tourism services within tourist attractions, due to shortage of labour from foreign sources due to travel restrictions (especially labour from Malaysia) – the analysis here should show a leftward shift of both graphs, the explanation of price adjustment mechanism, with application of Price Elasticity of Demand (PED) and Price Elasticity of Supply (PES).
  [Students should note that the application of elasticity concepts for this part of the question is optional, although it does add another dimension to the analysis.]
- In addition, due to recessionary impacts of the pandemic globally, incomes would have fallen in Singapore with job losses, leading to a more than proportionate fall in demand for tourist attractions in Singapore. This is because Income Elasticity of Demand (YED) exceeds 1 for a this luxurious type of service. [This will be credited as an added dimension to the analysis due to the application of YED]

  [For simplicity in analysis, only a fall in demand for tourism services offered by tourist attractions is shown below]

  - Dd_0 shifts left to Dd_1 following the fall in effective demand for tourist attractions.
  - At P1, qty dd is much lower than qty ss (Q3<Q1). This surplus leads to a downward pressure on the market price of these services. As price falls, qty dd rises along D_2 and qty ss falls along Ss. This process of price adjustment continues until the market equilibrates at P_2Q_2.
  - Total Revenue (TR) earned by producers of tourist attractions falls from P_1Q_1 to P_2Q_2.
    - PES<1 for tourist attractions, since there is limited spare capacity for a given tourist attraction such as Gardens by the Bay, or a the ART museum, due to space contraints. Morever, the pandemic has rendered labour rather immobile during this pandemic season due to cross-country travel restrictions. However, PES can be increased if opening hours are extended.
    - As seen in figure 1 below, total revenue falls significantly from P_1Q_1 to P_2Q_2. The fall in price is accompanied by a less than proportionate fall in qty supplied.
    - Since output does not fall as significantly relative to price fall, as dictated by the PES of Ss, tourist attractions may still be very dependent on the labour resources to manage the business.

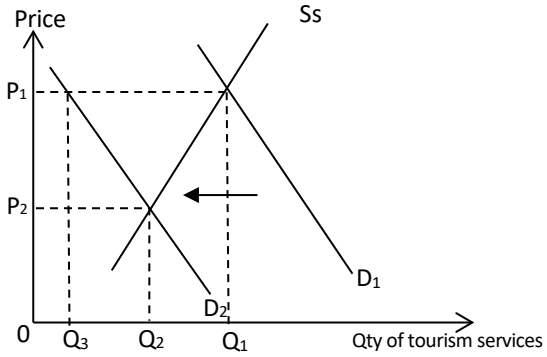


Figure 1: Market for tourism services by tourist attractions

Objective 2: Discuss 2 policies that have been or could be implemented to aid the recovery of tourist attractions and the trickle down effect on a related market, identified to be restaurants, a complement to tourist attractions.

Policy 1: The 9-month campaign to encourage locals to take mini-holidays in areas such as Chinatown, Little India, Orchard Road and Sentosa will seek to persuade locals to increase demand for tourist attractions within these places. These tourist attractions include places like Universal Studios, Adventure Cove, Cable Car trips, the Luge, the Istana, Fort Canning Park, the Indian Heritage Centre and Chinatown Street Markets.

- The policy approach to the recovery of the tourism sector is to encourage residents in Singapore to visit their 'backyard'. This domestic consumer group has never been tapped before by the Singapore Tourism Board.

  With $45 million driving this campaign to persuade locals to visit these attractions for a period of 9 months, effective demand could increase, particularly for the group of locals who have never been to their own backyard and have always had the preference to travel overseas for their holidays.

  - With the increase in DD for tourist attractions – A shortage due to the rise in effective demand, leads to the upward pressure on price. As price increases, Qs increases while Qd falls, until the shortage is eliminated at P_3Q_3.

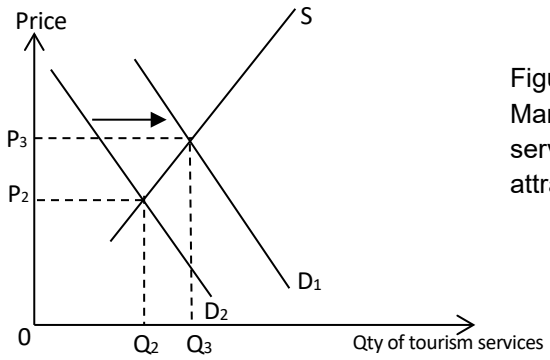


Figure 2: Recovery of Market for tourism services by tourist attractions

  - Total revenue rises from P_2Q_2 to P_3Q_3 → recovery of the sector
  - Firms can become more profitable and are able to survive during this Covid period
  - More jobs are retained withi higher output

Policy Limitations:

- However, such a rise in TR will not bring the market for tourist attractions back to pre-covid level of quantity traded and TR. The domestic market is very small relative to the global market, in sustaining this market.
- Whether this leads to a recovery of the market or not, depends on the extent of the rise of effective demand, in the midst of changing variables as well.
  - With the loss of jobs in many households due to the fall in foreign and domestic demand for goods and services, companies have been retrenching their workers depiste the expansionary budgets of the government. Disposable incomes of

households and individuals have fallen and this may impede the recovery of the market for tourist attractions. D2 may not rise to the extent of D1.
    - Some groups of locals will not have the purchasing power to consume such services.
    - Some might still not be persuaded to spend on these tour attractions as well → campaigns may not be effective in changing taste and preferences towards this attractions.
- The recovery of this market is hindered by the fall in supply of such services due to fall in foreign labour supply as countries close their borders and disallow travel for work. TR might fall significantly as supply of necessary labour is cut. PES is also low as workers become geographically immobile. So a mere price increase without the corresponding increase in qty supplied could be expected. Hence, there may not be a recovery in its related labour market as output of such services may not rise significantly due to the caompaign.
- Moreover, the survival of these firms depend on whether TR can cover total cost in the LR. These costs would have fallen as tourist attractions operate with shorter hours or offer fewer services with fewer staff to reduce variable costs. But recovery would depend on the rate of fall of TR relative to the rate of fall of TC.

Evaluation

- The 9-month campaign though possibility effective in the short-run because of the potential of an untapped domestic market, it will **not be feasible and not appropriate** beyond this time frame due to very high opportunity cost of such spending. Such financial resources could be spent on rescuing retail firms that are in the danger of closing, or given to the support of those who have lost their jobs and have low income to start with. Or diverted to the healthcare sector to support the development of the covid vaccine.

Policy 1 and the recovery of the related market: Restaurants

With the increased demand for services provided by tourist attractions amongst local residents due to an effective campaign, the complement goods market could be that for restaurant meals. Demand for restaurant meals could increase from D2 to D1, increasing the TR and hence benefitting the F&B sector as well.

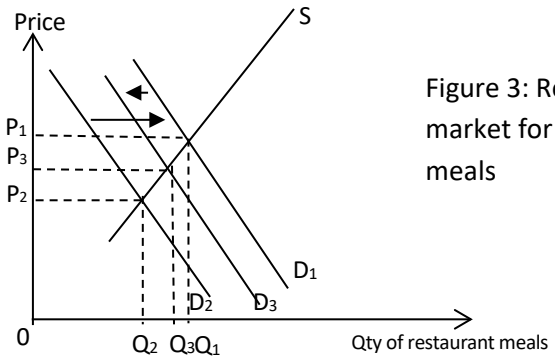


Figure 3: Recovery of market for restaurant meals

Policy Limitations on Restaurants / F&B

- However, with the rise in price of services provided by tourist attractions (by the policy), this could dampen the increase in Demand for restaurants from D1 to D3, as price increase in

complements will lead to a fall in demand for restaurant meals, depending on the CED between tourist attractions and restaurant meals. Refer to fig 3.

- This CED value is likely to be negative and low. Residents have an option to cook at home, or eat at hawker centres etc, unlike tourists who have planned packages that include restaurant visits after they visit the tourist attration. So these are not close complements. The rise in price leads to a less than proportionate fall in demand for restaurant meals. (CED magnitude is subject to reasoning and can be largely negative, depending on reasoning)
- This restaurant market is likely to recover but not to the same extent, as effective demand rises only a little [it is also possible and likely that restaurants will not be as adversely hit in the first place].

Note: Policy 1 could be the issuing of Tourism vouchers of $100 per citizen/pr above 18 years of age for tourist attractions.

- Such vouchers are a direct subsidy that can only be spent on a list of tourist attractions.
- This policy is more effective because it increases the household purchasing power for tourism services provided by tourist attractions, especially for low-income households.
    - It would likely lead to a short term recovery of this market as such a subsidy will increase effective demand as seen in Figure 1.
    - There will be similar limitations: cost considerations, households may not utlilise the vouchers as they will still need to spend beyond the subsidy to enjoy hotel stays etc.
    - Restaurant market recovery may stand a higher change be revived because where residents use the subsidies for staycations, they may visit restaurants nearby and this could boost revenue for these restaurants.

<u>Policy 2: Rental rebates or wage subsidies</u>

The government can provide rental rebates for these tourist attractions (or regulate that these be provided by property owners). They have also given wage subsidies to all companies for the continued retention of their workers. In the case of wage subsidies, these serve to reduce marginal cost of production for producers in the short-run.

- In the case of wage subsidies, supply rises from S1 to S2. With the surplus at P2, the downward pressure on price leads to P3Q3 being the new equilibrium.
    - With price of tourist attractions taking up a larger proportion of income for the average household in Singapore, demand for tourist attractions would possibly still be PED>1 (even if there are no options for travel), the fall in price leads to a more than proportionate rise in qty dd and this means TR will rise for the industry, no doubt less than pre-covid levels. The rise in TR due to the rise in qty dd will be greater than the fall in TR due to the fall in price.
    - This subsidisation of cost of production and the increase in total revenue will aid the recovery of the sector during this period.

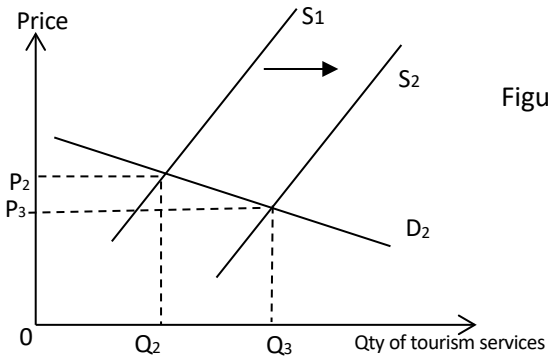


Figure 4: Post-subsidy output

Limitations:

- However, in the case of wage subsidies, a lot of this rise in output also depends on mobilty of labour. With high dependence on foreign labour in the tourism sector, there is limited degree to which supply of such services can rise even when there are wage subsidies given, as wage subsidies are only given for local employees.
- If tourist attractions can replace these foreign labour with local labour quickly enough without significant cost of training or re-training, the related market may recover sufficiently to earn normal profits in the LR.

Policy 2 and the recovery of the related market: Restaurants

- As the price of tourist attractions falls, demand for restaurant meals could rise based on the CED value.
- However, given that the CED value is negative and low, recovery is not certain.
- This market may recover due to wage subsidies also given to its own labour, though not comparable to pre-covid level. The analysis would be similar to that in Figure 4.

Evaluation

In general, for the restaurant market, it is likely that domestic demand is the main source of revenue (unless the restaurant is situated inside or nearby the tourist attraction). Hence, with or without a related recovery for tourist attractions, survival would be based on the YED value for restaurant food as incomes fall for households, and how market demand is raised in the midst of the pandemic where people stay home, and order delivery instead. Raising market demand is limited to physical space within the restaurants as most are operating below capacity due to safe-distancing measures.

Policy 3: the long-run measure would be to gradually open our borders to international tourists of selected countries who are deemed safe enough to come in, and who comply with the covid measures with the establishment of green lanes for essential business travel and official travel for a start.

- This means that foreign demand for tourist attractions would rise again, leading to recovery.
- This also means that PES can rise again and supply of labour can rise again without geographical immobility. Any rise in demand would lead to a rise in price and a corresponding larger than proportionate rise in quantity of output supplied, signalling more employment and revival of the job related market.

- The restaurant market can also be revived further as this is a complement good to tourist attractions. Of course, the extent of this rise in TR would depend on the direction of the change in price of tourism services as CED would come into play.

Limitations

The only limiting factor to full recovery for the market for tourist attractions (or tourism in general) will of course be the time required for the full development and distribution of the COVID vaccine worldwide. As Singapore reaches out to a vast market to grow its tourism market, this rate of vaccine development and distribution contributes significantly to the rate of recovery for this market.

[Note that other related markets within the tourism sector could be hotels, medical services catered to medical tourists etc. These would be complements. A substitute for tourist attractions could be home entertainment.]

Conclusion and Overall Evaluation

- The policies mentioned can only help in the recovery of the market for tourist attractions and its related market, in the short run.
- These measures are not sustainable in the long-run as it is costly and has high trade-offs.
- It is really up to companies to innovate and re-invent themselves in this new-normal, so that they can survive in the post-pandemic environment and thrive. While inward-looking firms that depend on the domestic market may not be so hard-hit by the pandemic, they will indirectly suffer losses as the Singapore economy shrinks from the lack of global demand for her tourism services. They too have to reinvent themselves.
- Of course, the government's effective allaying of fears of consuming tourism services in Singapore would be a necessary step towards reviving the markets in this sector in the long-run, and this it has done so very well at this present moment.

Mark Scheme

Knowledge, Application, Understanding, Analysis		
L1	– *An answer which briefly states suitable policy measures that can be used to aid in the recovery of the industry for tourist attractions.* – *Little / non-existent use of economic theory / framework in terms of relevant yardsticks for consumers discussed.* – *Glaring conceptual errors*	***1 – 8***
L2	– *Explains how the pandemic has negatively affected the market for tourist attractions.* – *An undeveloped but balanced answer for at least 1 suitable policy that targets the recovery of tourist attractions, and trickle-down effect on the related market within the tourism industry.* – *Gaps in explanation (Depth lacking in some areas / some small conceptual errors).* – *An undeveloped but largely one-sided explanation in terms of scope of analysis – i.e. discussion of effects of policies without limitations.* – *Some use of suitable examples.* *Note:* *Students who provide 1 policy to target each of the market for tourist attractions and another policy to target the related market will also be*	***9 - 14***

	credited equally. However, note that there will not be any opportunity for the use of CED in this approach.	
L3	– *A balanced and well-developed answer with precise and correct application of concepts, explaining clearly the negative impact of the pandemic on the market for tourist attractions, and providing a balanced analysis (including limitations) of suitable policies suggested for the recovery of this market, and the trickle-down effect on a related market. Good use of contextual examples.*	***15 - 20***
Evaluation		
E1	*An unexplained judgement ➔ An unexplained evaluative conclusion/comment*	***1***
E2	*Evaluative assessment supported by economic analysis ➔ Substantiation of an evaluative comment and/or conclusion*	***3 - 4***
E3	*Able to give in depth or well explained insights.*	***4- 5***

<u>Examiners' Comments</u>

- *In general, the organisation of content for a 25 mark question was decent. Students were aware that there ought to be a balanced analysis inclusive of limitations of policies proposed. In terms of scope of content, most students proposed more than just 1 policy measure to target the markets involved. There was also some effort in synthesis and evaluation. Students are advised to always plan well before attempting a full 25 mark question (as with all question actually).*

Areas for improvement:

- *There should be a conscious attempt to highlight the relationship between the market for tourist attractions, and the related market. For example, that the market for restaurant food is a complement market, or that the market for home entertaiment systems would be a substitute market. Quite a number of students misunderstood the complementing relationship for example, between tourist attractions and hotel services, as a derived demand, i.e. attributing the demand for hotel services to the demand for tourist attractions. Note that you do not have to derived for hotel services to produce tourist attraction services.*

- *In proposing the policy of a subsidy, students were often very general about what kind of subsidy this is. Is it a direct subsidy? Is it an indirect subsidy? This is important because the effects of these 2 types of subsidies differ greatly on the market for tourist attractions. The direct subsidy to consumers leads to a higher market equibrium price, in conjuction with a higher output. The indirect subsidy to producers leads to a lower market equilibrium price in conjunction with a higher output.*

- *There also tended to be a lack of depth of analysis. The price adjustment process was often missing in the analysis of the impact of a policy. Morever, there was also poor application of elasticities especially for the concepts of PED and CED. These were often ommitted even though obviously useful, or applied inappropriately. Students often applied PES after shifting the supply curve, and applied PED after shifting the demand curve. Students should apply PED when analysing SS changes, and PES when analysing DD changes. Many students did not know how to categorize the CED values for complements, stating that the CED was < 1. CED for complements is negative, and the magnitude differs depending on the closeness of the complement.*

- *There were a worrying number of students who approached this question as a market failure question, and went on to elaborate on the different sources of market failure in the tourism attractions sector.*

These group of students mainly had irrelevant discussion of the question. Do remember to pay close attention to the key words of the question before you start working on your responses.

Question 2

Singapore's largest healthcare dental group, Q&M Dental announced that it has acquired Aidite, a Chinese firm which produces components used in dental crowns. The firm now has access to and control of the expensive ceramic and zirconia material used to fabricate the crowns. In the market for radiology and diagnostic imaging services, Parkway Holdings Ltd proposed to acquire its close competitor, Radlink-Asia Pte Ltd.

(a) Explain the cost advantages arising from different types of mergers. [10]

(b) Discuss the factors that Competition and Consumer Commission of Singapore (CCCS) will consider in deciding whether to block such mergers. [15]

Part (a)

Introduction

- Definition of merger: Merging is a form of growth strategy, and it occurs when a firm combines with one or more existing firms to form an entirely new enterprise or by buying over another firm.
- Mergers include vertical integration, horizontal integration and conglomerates. This answer will focus on the first two types of integration.

Body

1. Vertical integration occurs when a firm combines with or takes over another firm at a different stage of production. It can be categorised into forward integration and backward integration. 'Q&M Dental acquiring Aidite' falls under backward integration, Q&M tried to increase ownership of companies that were once its suppliers of crowns.

   Cost advantages arising from backward integration include:

   (i) Certainty in cost of factor input. By acquiring Aidite, Q&M will be able to produce one of its factor inputs i.e. dental crown directly. This provides certainty over cost of production especially if its supplier, Aidite has a lot of market power and pushes up the prices of factor input to sell at P > MC. Previously, Aidite would have sold crowns at profit maximising price, but now that it is acquired by Q&M, the crowns could simply be acquired at cost price.

   Moreover, by owning Aidite, Q&M can prevent the fluctuations in prices in times of shortages in the market. For examples, when the market supply falls or market demand rises, the ensuing shortage will cause the market price of dental crowns to rise. But by having its own supply, Q&M is less likely to face such price changes that may impinge on its production cost.

   (ii) Certainty in quantity & quality of factor input. Owning Aidite ensures priority access to these raw materials, thus allowing Q&M to face less fluctuations in price in times of labour strikes in the supplier country.

2. Cost advantages arising from forward integration include (acceptable even though it is not linked to the context of the question):

(iii) Save on middlemen costs. In order to reach out to larger consumer base, firms may engage the service of middlemen. These middlemen may charge high fees and may be unreliable. If the firms merged with the firms selling the final output, this will enable the firms to cut down on the middlemen fees, thereby reducing cost. For instance, a durian plantation owner may pay commissions/fees to durian retailers in Singapore to sell their durians. By setting up or acquiring durian retailers in Singapore, they will save on the fees paid for the sale of their products to households. Other examples could be how a mobile phone company may have previously outsourced servicing of their phones to other companies for a fee. By acquiring these service centres, they will save on the fee paid to these companies and incur the servicing cost on their own.

3. Horizontal integration occurs when a firm combines with or takes over a similar firm at the same stage of production to form a single entity e.g. 'Parkway Holdings proposed to acquire Radlink-Asia'. Other examples include Grab's acquisition of Uber (South East Asia). The cost advantage arising here will be the different forms of internal economies of scale that enable the new firm to lower its LRAC.

(iv) Technical EOS- with such merging, jobs can be further broken down into more specific parts. Through repetitive jobs, hence less training is needed. The workers become more efficient in their job and productivity increases. This helps to lower the average costs of production for the merged firm. For instance, radiologists' ability and skills in interpreting X-rays, CT scans will improve with greater experience. This improved productivity will lower the average cost for the firm.

In addition, the merged firm will have more funds to buy more sophisticated equipment which improves the productivity of the radiologists, hence decreasing the long-run average costs. Alternatively, this costly equipment bumps up the total start-up costs of the firm which can be spread over a larger output level and will also lead to lower average costs.

There can also be more efficient use of data-base technology that can improve communication, raise productivity and thereby reduce unit costs. Parkway Holdings merger with Radlink Asia could lead to a centralised system of computer network which improves the way employees of both companies are able to conduct their duties.

(i) Managerial EOS- There can be better management and increased investment in training managers to supervise the workers. The merged firms can also streamline its human resource department and increase the human resource specialists' productivity by creating efficient and cost effective hiring and labour search processes. The cost of hiring these managers coupled with the rise in productivity will lead to lower AC of production.

(ii) Financial EOS- the merged firm will be given lower interest rates and larger loans because of better credit ratings and greater collaterals. Thus, this helps to lower fixed costs of production. In addition, the large firm can also raise capital more easily (and less costly) through the issuance of bonds to the public; this helps large companies to produce at a lower LRAC compared to smaller firms.

(iii) Research & development EOS- the returns from R&D are highly variable and uncertain. It is easier for large firms to carry the overheads of sophisticated R&D because such firms can spread the uncertainty in costs over a large level of output and thereby reducing unit costs.

Overall, internal EOS gives the merged firm a lower long run average cost curve and can be seen in the movement down the LRAC, towards the Minimum Efficient Scale.

Conclusion

The ability to enjoy such cost advantages through merging will help to increase the profits of the merged firm.

Mark Scheme

Knowledge, Application, Understanding, Analysis		
L1	– *Little / non-existent use of economic theory / answer that is largely descriptive knowledge with little or no economic framework applied.* – *Glaring conceptual errors* – *No examples given* – *An answer that does not show that meaning of question is understood*	***1 – 4***
L2	– *Use of economic theory that explains cost advantages arising from horizontal and vertical merging but:* – *Depth lacking in some areas and some conceptual errors* – *Lacking scope of analysis* – *Some reference made to examples*	***5 - 7***
L3	– *Excellent use of economic theory* – *Sufficient depth with few conceptual errors* – *Good use of examples to aid explanations* – *Accounts for both horizontal and vertical merging*	***8 - 10***

Examiners' Comments

- *Many students recognised the need to explain the cost advantages arising from both vertical and horizontal mergers. Some even extended their responses to discuss the impact of conglomerates acquiring other firms. However, there were many scripts that were more proficient in discussing internal economies of scale arising from horizontal mergers. The cost advantages arising from vertical mergers were either ignored or cursorily treated.*

- *In the discussion of internal economies, there was often a lack of precision and elaboration. There were a handful of scripts that did not clearly categorise the type of economies of scale. Yet there were others that gave one-liners when describing such economies. As a case in point, many answers merely linked technical economies to huge sunk cost spread over a large output when they could have elaborated on the productivity that increases with the purchase of more sophisticated equipment or the greater specialisation of labour that leads to greater efficiency, culminating in a fall in long-run average cost.*

- *For vertical mergers, the responses were often very vague and the effect on cost were mere statements without elaboration. Oftentimes, students merely lifted evidence from the preamble stating with Q&M's access to the raw materials, cost thus fell. There was hardly any elaboration on how cost actually fell. The link to ideas such as stable supply and less need to compete for resources were not forthcoming in the discussion.*

- *While it was commendable that students attempted to use diagrams to illuminate their ideas, some diagrams drawn were not appropriate to the context. Part (a) is a basic question on economies of scale, and there was no need to draw an elaborate diagram to link to the effect on AR and price as well as profits of firms. Such a diagram was actually more relevant for part b of the question. In this regard, students' discussion then went off tangent as the focus of the question was only about cost advantages, and not on profits nor market share.*

Part (b):

Introduction:

- Among the many roles and functions of CCCS, we will focus on its function innovation and competitiveness of markets in Singapore. We will be discussing from the perspectives of the 2 stakeholders of the CCCS – consumers and society.

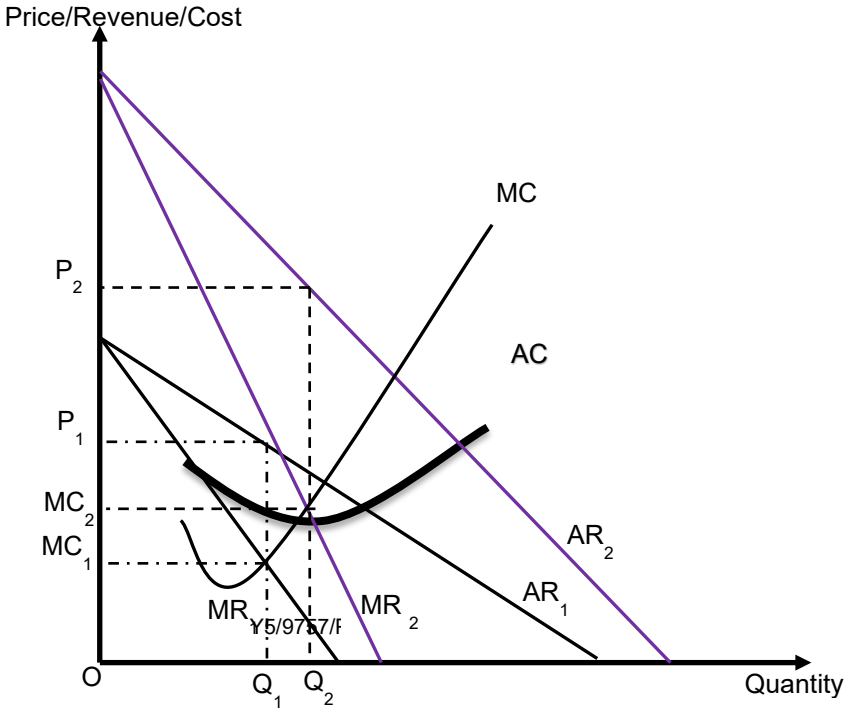
Body:

There are various approaches to this part of the question and all sound approaches will be accepted. Students could either look at the benefits and costs of blocking the mergers, or to analyse the factors that CCCS will consider in whether to block the merger or not.

1. Factors to consider to block the merger include:

(i) Degree of market dominance: Allocative efficiency and impact of price change on consumers

- If after horizontal merging, the new firm dominates the product market, increasing its market share in the industry, the demand for its product will become higher and less price elastic. This will be illustrated by a rightward shift of the AR and MR curves which also become steeper.
- Assuming the firm is a profit maximiser, it will be producing at MC=MR. With the rise in AR, there will be a higher equilibrium price and output as shown in Figure 1.
- With the rise in the price of the output from P1 to P2, consumers are worse off as they are paying a higher price for the same product.
- From the society's point of view, the difference between P and MC becomes bigger after the merger. It increases from P_1MC_1 to P_2MC_2. This shows that allocative inefficiency has worsened.
- Application: CCCS will need to consider what is the likelihood of price increments in the new merged firm between Parkway Holding and Radlink Asia. If the dominance in the market is witnessed followed by large increments in price and increasing allocative inefficiency, CCCS may find it necessary to block the merger.



(ii) X-inefficiency and diseconomies of scale – Productive inefficiency → wastage of resources

The merged firm may become complacent due to its market power and the lack of competition. It may be cost-ineffective and indulge in unnecessary and lavish spending. Such X-inefficiency causes the firm to operate at a point above its LRAC curve, and this is possible as the firm is still making some supernormal profits.

Moreover, there is no guarantee that the merged firm will enjoy internal economies of scale. Over-expansion and operating at an output beyond the MES can cause the firm to suffer from diseconomies of scale. It might be more difficult to co-ordinate amongst the different departments resulting in managerial diseconomies. This causes LRAC to rise instead.

These could result in wastage of resources which CCCS may consider in blocking the merger.

(iii) Innovation – Dynamic efficiency

After horizontal merging, having fewer firms in the market could mean the lack of competition and give the new firm greater certainty about their position in the industry. This may result in a lack of incentive to innovate and thus decreases dynamic efficiency. For instance, Parkway Holdings acquisition of Radlink Asia may reduce the investment into the latest radiology equipment as it does not fear the threat from customers switching to rivals.

This would mean that consumers will not benefit from improvements in quality of services and benefit from possible lower COP and price due to innovations.

(iv) Choice

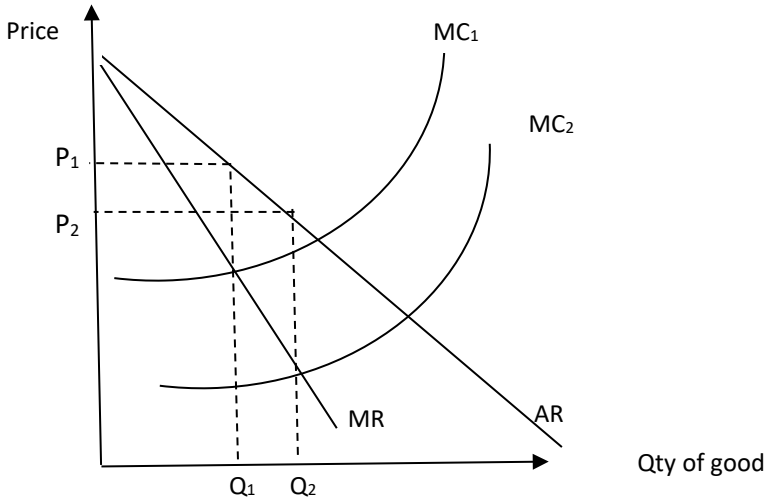
After horizontal merging, there will be fewer choices available to the consumers. This lack of choice could mean that consumers have little alternative but to opt for the merged firm if that is the main firm left in the industry. An example is the dominant position of Grab after acquiring Uber (SEA). Previously, consumers have the option to compare service and prices between the 2 large players – Grab and Uber. But after Grab acquired Uber, commuters are left with 1 main dominant provider.

The lack of choice may mean that consumer's welfare is not maximised as consumers have differing tastes and preferences and not all of it could be met.

2. Factors to consider not to block the merger include:

(i) Extent of IEOS

- In both vertical and horizontal merging, the merged firm could experience different forms of IEOS that enabled it to reduce its average cost of production. This is illustrated by a downward shift of MC_1 to MC_2, resulting in a decrease in price of the good from P_1 to P_2. These cost savings as explained in (a) are transferred to the consumers in the form of lower prices. For instance, if Q&M's backward integration with Aidite allows lower priced crowns to be acquired and significantly lowers its average cost of production, consumers may benefit from lower dental cost in Singapore.



The IEOS enabling the firm to reduce its LRAC will also mean that the merged firm may be moving towards the minimum point of LRAC, hence less productively inefficient from society's point of view.

(ii) Innovation

- After merging, the firm may earn higher supernormal profits due to higher revenue and reduction in costs, this enables the firm to invest in expensive R&D projects. R&D projects are costly and results are uncertain, thus firms' ability to engage in long term R&D projects are influenced by the level of profits they have. This improves dynamic efficiency in the society. Such projects may lead to product development or improvement which may benefit consumers too. This scenario is more likely when the market is still a competitive oligopoly and the firm still faces formidable rivals. It is also likely if the market is contestable, especially in the face of globalisation where big, foreign firms can enter the market.

Conclusion and Evaluation:

- Whether CCCS should block merger or not depends on the priority of the government. Given the tradeoffs between the efficiencies eg. improving dynamic efficiency but worsening allocative inefficiency after merging, the government may have to decide which is more important to society.
- Govt may also want to look at the industry where the merger is taking place. If the good is an essential good such as necessities eg food or in this context, dental care, price and allocative efficiency may be a key concern. Thus the government would have to base its decision on whether the lowered price due to eos can outweigh the exploitative pricing of a dominant firm. On the other hand, in industries where dynamic efficiency is valued such as in the pharmaceutical industry where life-saving medicines and vaccines can be developed, sometimes allowing a merger can increase the ability of the said firm to invest in r and d.
- Govt also wants to ensure competition in the market, if merger reduces competition and results in substantial entry barriers, the government can then incentivise new firms (by granting more licenses) to enter the market in order to increase the extent of competition. Alternatively, the merger can be approved and the government will monitor the behaviour of the merged firm. It can use regulatory pricing such as MC and AC pricing to ensure that the firms do not exploit consumers after the merger.
- Sometimes, the merger leads to an intensification of competition as there are now a few firms with comparable market share, the benefits may outweigh the costs. A case in point is the merger between Adidas and Reebok that made it a formidable rival to the big player Nike.

Mark Scheme:

Knowledge, Application, Understanding, Analysis		
L1	– *An answer which merely lists factors to block and/or not to block merging.* – *Little / non-existent use of economic theory / framework in the explanation.* – *Glaring conceptual errors*	***1 – 4***
L2	– *An undeveloped but balanced answer which explains the factors to block and not to block merging. Gaps in explanation (Depth lacking in some areas / some small conceptual errors).* – *A undeveloped but largely one-sided explanation in terms of scope of analysis* – *Some use of examples*	***5 - 7***
L3	– *A balanced and well-developed answer with precise and correct application of concepts, explaining factors clearly why merging should and shouldn't be blocked. Good use of examples.*	***8 - 10***
Evaluation		
E1	*An unexplained judgement ➔ An unexplained evaluative conclusion/comment*	***1***
E2	*Evaluative assessment supported by economic analysis ➔ Substantiation of an evaluative comment and/or conclusion*	***3 - 4***
E3	*Able to give in depth or well explained insights.*	***4- 5***

Examiners' Comments:

- *Many students approached the question correctly by explaining the positive and negative impact on consumers and society after the merger, which are some of the factors that CCCS should take into consideration. However, in many scripts, the discussion tended to be very descriptive with minimal link to an appropriate theoretical framework. There is a need for students to prioritise the important ideas, and the effect on allocative efficiency and price should not be left out of the discussion. This is one of the most important issues that should be discussed and linked to a good illustration.*

- *In the discussion of allocative inefficiency, the extent of rigour varied across scripts. The better scripts were able to link very clearly to a rise in DD and a change in the gradient of the DD curve due to falling PED to examine how a rise in price causes the extent of P>MC to increase. Weaker scripts tended to be one-liners and descriptive in nature, without much attempt to link to a well-drawn diagram. There were flaws in some diagrams, in that students erroneously showed a fall in output instead of a rise in output with a rise in AR/demand. The way to draw this complex diagram is to ensure that the new AR and MR curves are completely above the initial curves.*

- *It was rare to find the discussion linked to examples of different industries. Thus, many scripts offered a discussion that was purely theoretical without recognising that the benefits and costs of mergers may vary across industries. There were a handful of strong scripts that argued how mergers may be beneficial in industries with significant EOS. Some also argued that the nature of the product plays an important role in the CCCS decision. In industries like medical services, transportation and utilities, more scrutiny is to be expected as these are essential services. On the other hand, a merger of two luxury brands or non-essential goods is less likely to draw the attention of a regulatory body.*

Question 3

(a) Explain with the use of appropriate examples how merit goods differ from public goods. [10]

(b) Discuss the policies a government might adopt to achieve a more efficient allocation of resources where merit and public goods exist in markets. [15]

Part (a)

Introduction:

Define merit goods & public goods

- Merit goods could be defined as goods or services that are deemed socially desirable by the government, and which are under-consumed when left to the price mechanism because of consumers' failure to recognise the full benefits that could be derived from the consumption of the good for instance education and healthcare.
- Public goods, on the other hand, are goods that are both non-excludable and non-rivalrous in nature, eg. national defence and street lighting.

Criteria for comparison: (1) excludable vs non-excludable, (2) rivalrous vs non-rivalrous, (3) extent of market failure

Body:

(1) Excludable vs non-excludable

A **public good** like street lighting is **non-excludable** as it is impossible or very costly to exclude non-payers from consuming and benefitting from street lighting once it is provided. Since those who do not pay cannot be excluded, no-one has much incentive to help pay for such goods, resulting in the 'free rider' problem and concealing of demand. Suppliers will thus find it difficult or impossible to collect revenue for the benefits they provide. In contrast, a **merit good** like education or healthcare is **excludable** as it is possible to stop non-payers from attending lessons in universities or consume healthcare services like vaccinations. Providers of tertiary education and healthcare are able to collect payment and deny non-payers from consumption of these products, thus no free rider problem in the situation of merit goods.

(2) Rivalrous and non-rivalrous

A **public good** is **non-rivalrous** when the consumption by one person does not reduce the amount available to others. For example, once defence services are provided, it can be consumed by everyone within the border. If an additional person enters the borders, this does not reduce the amount of protection/security available to other residents. This implies that the marginal cost of serving an additional user of public good is zero.

On the other hand, **merit goods** like education are **rivalrous.** There is a limited number of vacancies available in each course offered by the universities. An additional person who registers for the course will reduce the number of vacancies available in the course for others. Hence the marginal cost of serving an additional user is non-zero in the market for merit goods.

(3) Extent of market failure

There is **zero/non provision of public goods/complete market failure** by the free market (missing market) due to its characteristics of non-excludability and non-rivalrous. The non-excludability resulted in free rider problem, making it difficult for private firms to collect revenue. This lack of profitability leads to zero/non provision by the profit maximising firms in the free market. Given its non-rivalrous nature and that the marginal cost of serving an additional user is zero, consumers should pay a price equal to the marginal cost

of serving an additional user under an allocative efficient provision of a public good. Since the marginal cost of serving an additional user is zero, a public good that is already produced should be made available free of charge to all individuals for efficient allocation level. However, private markets with profit-maximising firms will never provide goods at a price of zero, hence leading to allocative inefficiency. The non-excludable nature will result in a missing market and complete market failure, as society derives welfare from consuming public goods.

In comparison, due to the excludable and rivalrous nature of merit goods, private firms are able to collect revenue from users and charge a non-zero price. Hence **merit goods**, eg, education would be provided by the free market, albeit **under-production/partial market failure** due to presence of positive externalities (result of pursuit of self-interest of private individuals), imperfect information (result of ignorance about full private benefits of education), resulting in lower than social optimal level of production/consumption → partial market failure.

Mark Scheme:

Knowledge, Application, Understanding, Analysis		
L1	▪ *For a smattering of points with little economic analysis* ▪ *Glaring conceptual errors* ❖ *Mere stating/superficial explanation of reasons*	***1-4***
L2	▪ *Evidence of some comparison to show differences between public and merit goods i.e. criteria-based analysis* ▪ *Lacking in depth in the explanation of the concepts of non-excludable/excludable, non-rivalrous/non-rivalrous, market outcome (i.e. missing/partial market/zero provision/under-provision) etc*	***5-7***
L3	▪ *Clear use of criteria-based framework for comparison of differences* ▪ *Good scope and depth in explanation*	***8-10***

Examiners' Comments:

This is the most popular essay question out of the three. Majority of the students scored reasonably well for the entire question. In general, the weaker scripts showed lack of understanding of the question requirements and economics concepts.

1. *<u>Structure of essay</u>*

For part (a), the stronger students were able to display differences between merit and public goods using criteria-based comparison with excellent use of contrasting words like "in comparison", "on the other hand" etc in addressing the differences between the two goods. They also showed clear and excellent organisation of points with the use of paragraphs.

The weaker students, on the other hand, merely regurgitated what they know about merit goods and public goods without showing comparison in their answers. Some even went to the extent to explain all the sources of market failure for merit goods which would be better placed in part (b) instead. There was often no attempt in using paragraphs to organise their answers, resulting in lack of structure and clarity in flow of arguments. In addition, there was also poor elaboration and lack of use of examples to illustrate the features of public and merit goods.

2. *<u>Conceptual errors</u>*

- *Many students erroneously wrote "Due to the non-rivalrous nature, the marginal cost of producing an additional unit of public goods is zero …". This is inaccurate as the production of an additional unit of*

*good will require the use of resources and hence incur marginal costs. The **marginal cost of an additional unit of the good** is NOT zero. The correct expression should be "due to the non-rivalrous nature, once the public good is produced, the **marginal cost of serving an additional user** is zero .." There is a difference between marginal cost of an additional good versus marginal cost of serving an additional user. Students must learn to read their lecture notes carefully with understanding.*

- *A number of students merely stated the marginal cost of production/ providing for another user is zero and that is why the good is non-rivalrous in nature. A more accurate analysis should be that since the good is non-rivalrous in nature, the consumption of the good by one more user does not reduce the benefit enjoyed by another user/the rest in terms of the quality and quantity of the good available. As such, the marginal cost of providing for another user should be zero.*

- *Some students tried to recreate their own economics terms. Instead of writing "non-excludable", they wrote terms like "non-exclusive". Other terms like "non-exhaustive", "non-commissionable were used instead on "non-rivalrous". All these terms are not acceptable. Students are to use the key terms found in their notes and not recreate unnecessarily.*

- *Many students also did not understand the concept of public goods and used feature like "free provision by government" to characterise public goods. This is erroneous as public goods are characterised by features of "non-excludable" and "non-rivalrous". Free provision by government does not mean it is a public good as merit goods too can also be provided free by the government. There was also a handful of students who wrote that some merit goods are public goods which again is erroneous.*

- *In general, the explanations for why street lighting/national defence are public goods were largely accurate, but sometimes vague or rushed. Students should try to be clearer and more explicit in their explanations:*

  (✗) National defence is a public good as it is impossible to exclude a non-payer from the benefits of defence.
  (✓) National defence is a public good as it is non-excludable. Once defence is provided, all within the country will benefit from security against external threats, and it is impossible to exclude immigrants, tourists or other non-taxpayers. As long as these non-payers are within the borders of a country, it is very difficult for a provider to identify these non-payers and choose not to defend them.

  (✗) National defence is non-rivalrous as more consumption of defence by another person does not cause another to enjoy less defence.
  (✓) National defence is a public good as it is non-rivalrous. An army defends the borders of a country against external threats. Even with an increase in the population size or the number of immigrants, the quality of defence does not diminish for those already within the borders. Hence, the cost of providing the service to an additional user (an immigrant or a tourist) is zero.

Part (b)

Introduction:

Briefly explain the source of market failure for merit and public goods.

- Public goods – zero provision by private market due to its non-excludable and non-rivalrous characteristics (as explained in part a)
- Merit goods – under-production due to presence of positive externalities, imperfect info, excessive income inequality (brief explanation of any 1 source)

Body:

Explain any 2 policies to address the source of market failure in public goods/ merit goods

- 1 policy for merit goods (to be prescribed to the source of market failure selected)
- 1 policy for public goods

1. Indirect subsidies to producers of education and healthcare

Governments can correct *positive consumption externalities* using an **indirect subsidy**. For example, in the case of merit goods that generate **positive consumption externalities**, too little resources are allocated to the consumption and production of these goods if left to the free market. This is because in the pursuit of their self-interests, consumers disregard the positive consumption externalities generated for instance a more productive workforce and higher economic growth with consumption of education.

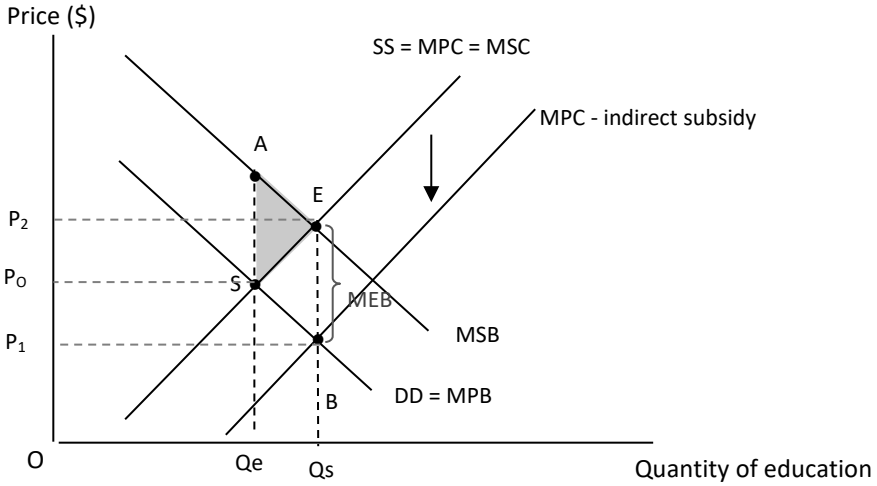


Figure 1: indirect subsidy

Providing subsidies to the producers such as grants given to schools has the effect of reducing the marginal private cost of providing education services, which will thus result in lower education fees. Figure 1 shows that with an indirect subsidy of an amount equal to the MEB at OQ_s (EB), the MPC curve shifts downwards from MPC to MPC – indirect subsidy. This causes the price that consumers pay to fall from P_O to P_1 and the post-subsidy price received by profit-maximising producers to increase from P_O to P_2. Under-consumption of education is corrected as the quantity of education rises from OQe to OQs, which eliminates the deadweight loss to society (AES). Allocative efficiency achieved.

2. Direct Subsidies to consumers of education and healthcare

The government may also correct for **positive consumption externalities** by providing a **direct subsidy to the consumers**.

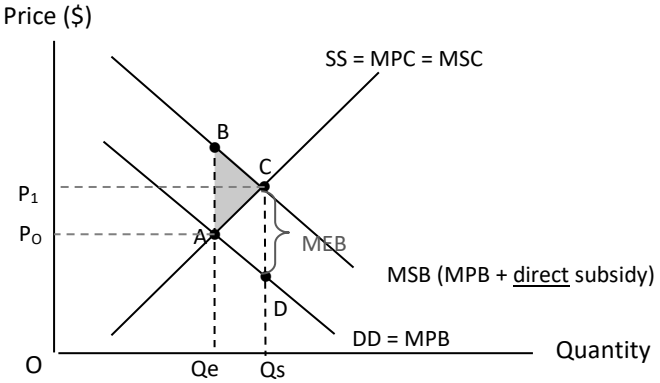


Figure 2: Direct Subsidies to Consumers

In Figure 2, the free market equilibrium level of consumption is at OQe where MPC = MPB. With government intervention, a **direct subsidy** to consumers equal to the MEB at OQ_s of amount CD will shift the MPB curve from MPB to MSB because the direct subsidy increases consumers' ability to increase consumption, which leads to a higher effective demand, resulting in the socially optimal level, OQs where MSC = MSB. The under-allocation of resources would be corrected as the positive externality is said to have been 'internalised'. The deadweight loss to society (ABC) is thus eliminated, achieving allocative efficiency.

An example of such a subsidy to consumers would be the Personal Edusave Account given to all Singaporean children who are enrolled in MOE-funded schools. The children will receive an annual Edusave contribution which they can tap on for education use. Another example of a direct subsidy would be the Baby Bonus Scheme, where the savings accounts of children are matched dollar-for-dollar by the government, in the attempt to defray the costs of healthcare and early childhood education associated with raising children. This would subsequently raise the demand for such goods and services.

Merits / Advantages of Subsidies

- A subsidy is **popular** and can be **easily implemented** to bring about an increase in production and consumption and is flexible enough to be adjusted according to the magnitude of the problem.
- **Consumer sovereignty** is still present since subsidies allow the market to operate (although distorted by the subsidy). Financial incentives are given to economic agents to ***internalise the* positive externalities**, resulting in a change in their behaviour.

Limitations of Subsidies

- To achieve allocative efficiency, accurate information on the size of the external benefits is required. The **valuation of the external benefit is difficult to quantify,** leading to government's failure in achieving social optimal level.
    - EV: However, in the situation of under-valuation of external benefit, society will still be better off given that the free market equilibrium is closer to social optimal level and deadweight loss is smaller.

- Subsidies can impose a **huge burden on the government and taxpayers** because huge financial resources are required to finance subsidies. The government may not have the ability to fund all merit goods and goods that generate positive externalities. They may have to set high direct tax rates like personal income tax rates and corporate tax rates. However, raising direct tax rates above the optimal rates can discourage work effort (if the substitution effect outweighs the income effect), savings and investment in the country, as well as give rise to the problem of brain drain in the country. Raising taxes are also politically unpopular which may reduce the chances of the government being re-elected into parliament. Alternatively, the government can borrow from the private sector or other countries but this may result in unsustainable levels of government debt.
- Huge subsidies in one project, like in the health care sector, can result in **large opportunity costs** because there will be less government financial resources available for other developmental projects, e.g. education sector. In the presence of a budget constraint, all spending decisions, at the margin, imply trade-offs.

3. Campaigns/ education (Merit good/imperfect information)

Governments can influence the behaviour of consumers through education and campaigns. With *imperfect information* about the importance of early detection and treatment, consumers underestimate/ are ignorant about the private benefits of health screening and consume health screening at Qe. This is under-consumption in contrast to social optimal level at Qs with perfect information, leading to deadweight loss of ABC. Through education and campaigns, private demand for merit goods would move to the socially desirable levels, causing consumers to consume at the socially optimal level.

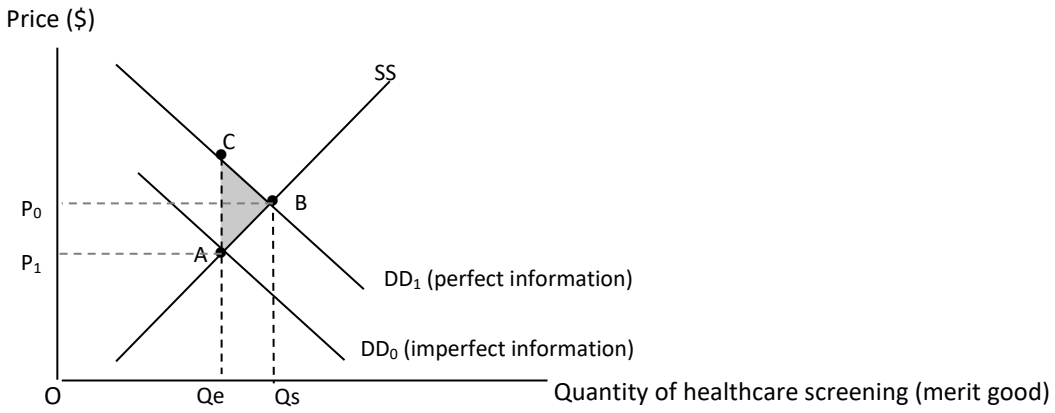


Figure 3: Encouraging Consumption of Merit Goods (Imperfect information)

Referring to Figure 3, when the government educates consumers via campaigns or supplying information directly to them about the full private benefits from consuming healthcare screening services, consumers, who are more accurately informed, will seek to maximise their self-interests by increasing their demand for these services from DD_0 to DD_1, resulting in the socially desired output level OQs to be achieved and elimination of deadweight loss of ABC. Thus under perfect information, consumers will not only maximise their own well -being, but also society's well- being.

Advantages

- If information failure is the source of market failure, education and campaigns will effectively **target the root cause** of market failure.

Limitations

- Public education and campaigns are **costly and may drain government resources**. They are normally done through roadshows, mass community events, advertisements in media and these typically need to be large scale, pervasive and sustained over a long period of time to in order to be effective.
- Public education and campaigns also require a **long time period** to achieve the desired outcome because it tends to be difficult to change consumers' habits, values, attitudes and mindset.
- Collecting and disseminating information to consumers is **difficult and costly.**

4. Direct provision of public goods by government

In correcting the market failure due to zero-provision of public goods (for example, national defence and street lighting), the government's only feasible option is to provide these goods and services directly and fund them through taxes because public goods are non-excludable and non-rivalrous. In the Singapore context, the Singapore government provides national defense and street-lighting directly and funds their production through taxes. The Ministry of Defense manages the army while the Singapore Land Transport Authority manages the streetlights along public roads since the free market often cannot provide such public goods.

Merits/Advantages of direct provision

- Without government intervention, public goods would not be provided. A missing market in this case may indicate a significant loss to society's welfare. For instance, street lighting can be used to promote security in urban areas and to increase the quality of life by artificially extending the hours in which it

is light so that activities can continue to be carried out by the community. Street lighting also improves safety for drivers, riders, and pedestrians.

Limitations of direct provision

- The benefits from and costs of providing public goods are often highly **uncertain**. For instance, it is in practice **difficult to measure** the size of the marginal private benefits generated from the provision of public goods because there is no effective demand or price signals for public goods due to the free rider problem. Putting a monetary value on benefits like safety and security is also difficult. Herein lies the major difficulty in calculating expected benefits, i.e. ascertaining the market price of the good as such a good has no price (which is a gauge of its value to consumers).
- Direct provision of public goods is financed through the taxes that the government collects. This means that there will be **distortions and opportunity costs associated with acquiring these taxes**, and society's welfare could be reduced.

Conclusion and Overall Evaluation:

- In achieving a more efficient allocation of resources for public goods, the best government intervention is direct provision given the case of missing market. Despite possibility of government failure, society is still better-off with government provision compared to zero provision. Moreover, government failure can be minimised with the routine conduct of surveys and collection of data. These will enable government to provide public goods as close to the social optimal level as possible, achieving greater allocation of resources.
- As for merit goods, given the multiple sources of market failure, it is best for government to intervene with a package of relevant policies that could address the specific source of market failure and complement each other.
- For instance, while subsidies could address the under-consumption from imperfect information, it is not the best policy as it does not address the root cause of imperfect information. Once subsidies are removed, the under-consumption problem would return as consumers are still misinformed about the full private benefits of consuming education/healthcare screening.
- Thus, it is more effective that government intervenes in the education/healthcare market with subsidies to address positive externalities and campaigns to address imperfect information in the longer run. The change in mindset given greater knowledge would allow more optimal level of consumption should subsidies be removed in the future.
- Targeted subsidies to the low-income families could also complement campaigns as the former could help address the under-consumption that arises due to excessive income inequality. The low-income families although may be aware of the full private benefits, the inability to consume may hinder them from consuming at the optimal level.

Mark Scheme:

Knowledge, Application, Understanding, Analysis		
L1	▪ *Did not link to economic theory or framework at all* ▪ *Glaring flaws in economic analysis throughout* ▪ *Listing throughout rather than explaining the policies used by a government*	***1-4***
L2	▪ *A somewhat balanced answer with attempt at **analysis** of **both the effectiveness and limitations** of the policies by a government with application specific to examples of merit and public goods* ▪ *Use of relevant theoretical framework* ▪ *Some scope and depth in explanation*	***5-7***
L3	▪ *Balanced answer with **comprehensive analysis** of **both the effectiveness and limitations** of government policies with application specific to examples of **both merit and public goods***	***8-10***

	▪ *Clear use of relevant theoretical framework* ▪ *Good scope and depth in explanation* ▪ *Brief explanation of the source of market failure for merit goods and public goods which can be incorporated into policy explanation.* ▪ *2 policies well discussed for merit and public goods*	
Evaluation		
E1	▪ *A one-liner conclusion that makes sense* ▪ *Unsupported judgment about the policies*	***1***
E2	▪ *Some substantiated judgment about the policies through comparing the policies or qualifying these judgments.*	***2-3***
E3	▪ *Insightful and perceptive evaluation* - *Well substantiated judgment about the policies through comparing the policies or qualifying these judgments*	***4-5***

Examiners' Comments:

1. *Structure of Essay*

For part (b), the stronger students recognised the need to briefly explain the market failure source and prescribe relevant policies targeted to address the source of market failure. There was excellent use of economics framework with good elaboration of how the policies work and discussion of limitations of policies. The weaker scripts generally gave answers that were lacking in depth without clear reference to diagrams on how the policies worked. They did not identify and explain the source of market failure involved. Answers were also one sided without discussion of limitations of policies.

In the discussion of the limitations of policies, many students just conveniently wrote the same limitation of "incurring opportunity costs" for all the policies. While this is not wrong, it reflects a lack of diversity in terms of coverage of ideas. The better students, however, were able to identify the critical limitations which may be unique to the particular policy instead of just writing the same limitation for all. These students tended to score better as their answers were more outstanding as a result.

2. *Other errors*

(i) There was confusion between positive externality and imperfect information concepts. These are two totally different concepts. Many students wrote that positive externality is a result of consumers not being aware of the external benefits, hence leading to under-consumption. This is incorrect. Positive externality is due to the pursuit of self-interest by individuals and NOT about ignorance. Hence positive externality is a situation of "I don't care"! In contrast, imperfect information is usually related to ignorance about the full private benefits NOT ignorance about external benefits. Imperfect information is about "I don't know it is good for me"!

(ii) There was also confusion between direct and indirect subsidy and how these subsidies affected MPB and MPC. Indirect subsidy is given to producers, lowers cost of production and hence increases incentive of producers to increase supply of merit good. This is reflected by the MPC curve shifting to the right on the diagram. On the other hand, direct subsidy is given to consumers to encourage them to increase demand as they will now have higher purchasing power and more willing to consume. This is reflected by rightwards shift of the MPB curve.

(iii) A fair number of students used the same diagram to explain the three different sources of market failure. You have been advised multiple times not to do that.

(iv) Many students were confused between nationalisation and direct provision of public goods. Instead of writing direct provision of public goods, many wrote that government should nationalise to address market failure problem for public goods. Nationalisation refers to the transfer of industry from private ownership to state control. In the market for public goods, there is no private ownership to begin with since no private firms will provide public goods. It is thus impossible for government to take over any private firms.

(v) The elaboration of how campaign and education reduces the market failure caused by imperfect information was very superficial:

> *(✗) The government can correct imperfect information through the use of campaigns. This helps to make consumer more aware of the benefits of health screenings.*
>
> *(✓) The government can correct imperfect information through the use of campaigns. For example, campaigns can be helpful to correct the underconsumption of healthcare screenings. The Health Promotion Board may choose to advertise on TV, the radio or social media on the importance of health screenings in preventing the onset of chronic diseases like cancer. Posters can be placed in clinics and hospitals and doctors can also spread the information during clinic visits. Talks and roadshows can be held in community centres to help spread the message amongst the elderly.*

(vi) Students tended to state points and not develop them. This could be based on a misconception of how teachers credit answers. Marks are not awarded based solely on the presence of a point, but also for its development. The quality of the answer improves significantly if one develops the point.

> *(✗) One limitation of campaigns is opportunity cost. The funds used for campaigns could be used for other projects by the government.*
>
> *(✓) However, the extensive use of campaigns would entail opportunity cost. Government resources have competing needs, and the use of funds toward campaigns might use up funds for other projects, such as subsidies for housing and education, or long-term infrastructure developments. Given campaigns need to be carried out over a long period of time to be effective, the extensive use of campaigns can be an unjustified use of tax revenue. Taxes might even need to be raised if the government suffers a deficit.*

********END********

"Strive for progress, not perfection." (Unknown)