**H1 Economics 2018 – CSQ – Demand and Supply & Market Failures – Q2**

**Uber in Singapore**

A Certificate of Entitlement (COE) represents a right to vehicle ownership and use of the limited road space for 10 years. There are 5 categories of COE for bidding – Category A to Category E. Vehicles classed under Category A are up to 1,600cc and 130bhp.

**Figure 1: 2016 COE Prices for Category A (1,600cc and 130bhp)**



Source: Land Transport Authority

**Extract 1: Private-hire car companies join in the bid for COE**

Uber-owned Lion City Rental is looking to put 1,800 new cars on the road in anticipation of growing demand. Rival company Grab is also expected to do the same. In recent months, both have started sourcing for new vehicles, and are jostling with private car owners for fresh Certificates of Entitlement (COE). Now, with the Government announcing "light touch" regulations governing third-party taxi apps, the proliferation of private-hire vehicles will accelerate. Most of the taxi companies are also starting up private-hire subsidiaries to compete with Uber, Grab and other small players like Smove and Tribecar. This will only intensify the competition for COEs. Most private-hire cars are smaller vehicles, so the pressure will be greater on COE Category A bidders (cars up to 1,600cc and 130bhp).

However, the COE quota is set to grow. The supply of COE is mainly determined by how many cars are de-registered (and either scrapped or re-exported thereafter); when one car leaves the road for good, it creates room for a fresh COE so that a new one can take its place. The COE release for passenger cars is expected to rise sharply to about 95,000, compared to about 58,000 in 2015.

Source: Todayonline, 16 January 2016 & The Straits Times, 16 April 2016

**Extract 2: Regulations on private-hire cars**

**(affects the availability of resources – drivers of private-hire cars) PES is price-inelastic)**

Private-hire car (PHC) drivers from ride-sourcing service operators such as Uber and Grab are now required to obtain a vocational licence under amendments to the Road Traffic Act. PHC drivers are required to go through a medical examination, attend a 25 hours course and pass a test. This framework will ensure the drivers are equipped with sufficient knowledge and skills to provide the service safely. Together with the existing rules that require PHCs to be licensed as public service vehicles and to have adequate insurance, these measures help LTA better enforce against errant drivers and vehicle owners.

Source: The Straits Times, 10 March 2016

**Extract 3: Enhancing vehicle incentive schemes for a cleaner environment**

Extra miles’ worth of pollution is being belched into Singapore’s air every year from a traffic spike fuelled by ride-sharing apps such as Uber. The lower cost of taking an Uber is encouraging some people to step away from public transport and get into the Uber. According to figures in the past two years, Singapore fell short in meeting its targets for pollutants. The Government will hence adjust the current Carbon Emissions-Based Vehicle Scheme (CEVS) in a bid to nudge car-buyers towards cleaner and more environmentally-friendly models such as electric vehicles.

The current CEVS will be replaced with a new scheme that would consider four other pollutants which include nitrogen oxides, hydrocarbons, particulate matter and carbon monoxide on top of carbon dioxide. The National Environment Agency said rebates for environmentally-friendly car models will range between S$10,000 and S$20,000, depending on the vehicle’s worst- performing pollutant. By including four more pollutants, the new scheme hopes to account more holistically for the health and environmental impact of vehicular emissions.

Source: Channel News Asia, 8 March 2017

**Extract 4: Electric vehicles ‘not economically feasible yet’**

A study on electric vehicles (EVs) found that consumers were concerned about the purchase price of EVs as it is more expensive than a petrol-driven car even with rebates, the availability of personal and public charging infrastructure and the limitations of the technology such as the range, battery life and time taken to charge EVs. Nevertheless, the LTA and the EDB noted that similar to the development of hybrid vehicles, the prices of EVs are expected to fall as the cost of the technology continues to decline and mass production allows for cost savings from larger scale of production.

Source: Today, 6 July 2017

**Extract 5: The unstoppable march of the gig economy**

This year we saw the rise of the "gig economy", which is characterized by the prevalence of short-term contracts or freelance work. For instance, there is a flow of investments into Singapore as Uber and Grab firms established their foothold in Singapore. Even as retrenchments rose and job vacancies fell in the tepid job market this year, private-hire jobs have emerged as a bright spot. Consumers embrace having personal drivers to ferry them. Employers benefit as they could turn to hiring freelancers to reduce cost. Push factors for workers include greater work-life balance and structural challenges such as a mismatch between skills and jobs that may nudge them into temporary freelance work. Ride-sharing services may also generate positive externalities. They could reduce parking congestion. More importantly, the widespread availability of private-hire services can signal that a local economy is friendly to the high-tech industry and so can be a draw for investments.

While the gig economy has unravelled a vast ocean of opportunities for many, it also carries downsides, with the lack of benefits and protection posing headaches for policymakers. For instance, in Singapore, the lack of Central Provident Fund (CPF) contributions, a core pillar of the Republic’s social security system has implications for home ownership and healthcare. Experts also expressed their concern that the gig economy may stymie workers’ desire to deepen their skills.

Source: Today Online, 22 May 2017

**Questions**

(a) Using the data from Figure 1, summarise how the price of COE had changed from March to December 2016. [3]

(b) With reference to Extract 1, use supply and demand analysis to explain the likely impact on the price of COE. [5]

(c)(i) Define price elasticity of supply. [1]

(c)(ii) Using Extract 2, explain how the price elasticity of supply for private-hire cars might have changed with the need for the drivers to apply for a vocational license. [2]

(d)(i) Using Extract 3, explain the economic case for government intervention. [5]

(d)(ii) Comment on the effectiveness of rebates for environmentally-friendly car models in curbing vehicular emissions of pollutants. [6]

(e) Extract 5 describes the introduction of private-hire car services in Singapore. In light of the above, discuss whether the advantages outweigh the disadvantages. [8]

[Total: 30]

**Suggested Answers**

**(a) Using the data from Figure 1, summarise how the price of COE had changed from March to December 2016. [3]**

Overall, the price of COE had increased from March to December 2016. (general trend)

The price of COE had gradually increased from March to June 2016 before prices declined steadily from July to December 2016. (pattern or refinement)

**(b) With reference to Extract 1, use supply and demand analysis to explain the likely impact on the price of COE. [5]**

The price of COE is determined by the forces of supply and demand for COE as reflected by the market equilibrium..

Demand factor

As mentioned in Extract 1, with Uber and Grab sourcing for new vehicles to be on the road coupled with minimal government intervention on 3rd party apps, the demand for private-hire cars will be on the rise. As the increase in demand for new private-hire cars will require COE, the demand for COE will increase, shifting the demand rightwards from D1 to D2, ceteris paribus.

Supply factor

Also, as mentioned in Extract 1, as COE quota is set to grow, supply of COE will shift rightwards from S1 to S2, ceteris paribus. (quote)

Justify which curve shifts more

COE supply “is expected to rise sharply in 2016 to about 95,000, compared to about 58,000 in 2015” 🡪 the numbers is expected to increase by almost twice 🡪 we could justify that supply shifts by a greater extent compared to demand.



Market adjustment process

At the original price P1, quantity supplied is greater than quantity demanded, this leads to a surplus and hence downward pressure on price from P1 to P2 till the surplus is eliminated. Final Outcome

Hence, prices of COE falls from P1 to P2 and quantity of COE increases from Q1 to Q2.

**(c)(i) Define price elasticity of supply. [1]**

Price elasticity of supply measures the degree of responsiveness of quantity supplied to a change in the price of good itself, ceteris paribus. State formula.

**(c)(ii) Using Extract 2, explain how the price elasticity of supply for private-hire cars might have changed with the need for the drivers to apply for a vocational license. [2]**

As mentioned in Extract 2, the private-hire car drivers are required to apply for a vocational license where they need to go through a medical examination, attend a 25 hours course and pass a test. This makes it relatively more difficult for an individual to be a private-hire car driver and may even deter some of the private-hire drivers who drive to earn a part-time income. Given an increase in price, the quantity supplied for private-hire cars increases by less than proportionate.

Hence, the introduction for the need to apply for vocational license will make the price elasticity of supply for private-hire cars to be relatively more price inelastic. (supply of resources which are drivers will be limited)

**(d)(i) Using Extract 3, explain the economic case for government intervention. [5]**

(overview sentence, economic causation, draw diagram, description of diagram, evaluation)

Identify the source of market failure

Air pollution caused by cars generate negative externalities in consumption, which is a source of market failure. And its definition

Define negative externality in consumption

Refers to the costs of consumption, which fall on people other than the consumers of the product, for which no compensation is made.

Example of negative externality in consumption

From Extract 3: “health and environmental impact of vehicular emissions” 🡪 reduce the quality of the environment to the community and may cause long-term health problems such as lung cancer to others, incurring medical costs.



In a free enterprise economy, the price mechanism will only consider private costs and benefits, ignoring externalities. To the individual car user, the level of car usage will be at the point where MPB = MPC (private efficiency). Car users do not take into account external costs generated. As such, Qpte is being consumed. However, the socially optimal level of output is at Qsoc (Qs), where MSC = MSB. At Qpte (Qm), the MSC is greater than MSB. One extra unit of output adds more to society’s costs than to society’s benefits. There is over- consumption of car usage that generates negative externalities, and hence a welfare loss to society occurs, shown by the shaded area. The market fails because economic efficiency has not been achieved at Qpte (QM). Hence, the need for government intervention.

MPC pivots to MEC as qty of consumption or production increases as the value of negative externalities increases (MEC rises as qty increases)

**(d)(ii) Comment on the effectiveness of rebates for environmentally-friendly car models in curbing vehicular emissions of pollutants. [6]**

(provision of subsidies – providing incentives to use environmentally car)

Explain how rebates for environmentally-friendly car models curb vehicular emissions:

From Extract 3: “The National Environment Agency is implementing rebates for environmentally-friendly car models that range between S$10,000 and S$20,000, to nudge car- buyers towards cleaner and more environmentally-friendly models such as electric vehicles.”

The rebates equivalent to the size of the MEB at Qsoc will lead to a fall in the cost of purchasing an environmentally- friendly car model. This will compensate the consumer for the positive externalities generated. The subsidy encourages the consumer to take into account (internalise) the external benefits, raising the MPB to be at the same level as the MSB. Faced with the new demand curve, the consumer will increase consumption of environmentally-friendly car models to Qsoc, which is the socially efficient level.

This will lead a fall in consumption of non-environmentally-friendly car models and hence a fall in vehicular emissions of pollutants as consumers switch towards environmentally-friendly car models which are cheaper substitutes with the rebates as MEC in the road usage market is reduced and the MPC = MSC = MSB is attained as the market equilibrium at Qm and Qs is the same level of output where the welfare loss to society would be eliminated.

Draw diagram and describe diagram (explain how the road usage market’s MEC is reduced and Qs = Qm)

Evaluation of rebates:

From Extract 2: “A study on electric vehicles (EVs) has found that consumers were concerned about the purchase price of EVs as it is more expensive than a petrol-driven car even with rebates.” There is difficulty in measuring the exact value of the MEB in monetary terms, as externalities are “unpriced” effects. If the external benefits are not accurately estimated, the government could either provide too much subsidy or too little subsidy. In this case, the rebates may be too little to make consumers switch to buy environmentally-friendly car models such as electric vehicles.

From Extract 2: “lack of personal and public charging infrastructure as well as the limitations of the technology such as the range, battery life and time taken to charge the vehicles.” 🡪 Besides cost, consumers are concerned with the infrastructure and the limitations of the technology, hence rebate alone is not sufficient to encourage consumers to switch to buying electric vehicles to curb air pollution.

Subsidies require a high level of government expenditure; in order to provide finance for the subsidies, the government may have to impose high tax rates on citizens. This may in turn have disincentive effects on work, investment and hence adverse effects on the economic growth of the country./Opportunity cost of government expenditure. The money could be channelled to other productive purposes such as education and healthcare.

Conclusion

In conclusion, rebates may not be effective in encouraging consumers to switch towards environmentally-friendly cars due to the limitations mentioned above. As such, government will need to implement other policies such as provision of charging infrastructure and R&D to overcome the current limitations of the technology to encourage more consumption of environmentally-friendly cars to curb air pollution.

This for rebate to be given diagram.

As seen from the diagram, the provision of subsidies by the government to the consumer in the form of rebates will raise the MPB to MSB’(MPB+ Subsidies) as the consumers’ purchasing power has increased their demand for the electric car. As a result, the quantity will increase from Qm to Qs, solving the problem of under-consumption and eradicating the welfare loss as the problem of market failures is solved.

**(e) Extract 5 describes the introduction of private-hire car services in Singapore. In light of the above, discuss whether the advantages outweigh the disadvantages. [8]**

Thesis: Advantages of the introduction of private-hire car services

**1. Higher I 🡪 Sustained Positive Economic Growth and Low Unemployment + Improve capital and financial account**

Extract 5: “there is a flow of investments into Singapore as Uber and Grab firms established their foothold in Singapore.” + “More subtle but perhaps even more important, the widespread availability of private-hire services can signal that a local economy is friendly to the high-tech industry and so can be a draw for investments.” 🡪 improve capital and financial account + Increase I 🡪 increase in AD 🡪 AD shift rightwards.

Firms will experience a fall in inventories. This will signal to the firms to step up production. Firms will employ more workers leading to rising output. This results in falling unemployment and rising income. As income rises, spending by the households will increase. As one’s spending becomes another income, this rise in spending will lead to a rise in income of another group of people because of the increasing demand for the goods and services they produce. The multiplier effect is triggered off leading to a multiple increase in production, output and national income 🡪 actual economic growth, assuming the Singapore economy is operating in the intermediate range.

Increase in investment 🡪 more spending on capital goods (e.g. on machines, equipment and factory buildings) + bring about an improvement in technology, the economy’s ability to produce goods and service increases. LRAS increases and shift to the right. This will increase the potential output of the economy and results in potential growth in the long run.

Sustained positive EG will be attained with the economy achieving both actual growth in the SR and potential growth in the LR.



**2. Improvement in non-material standard of living**

From Extract 5: “Consumers embrace having personal drivers to ferry them” 🡪 provide consumers convenience 🡪 improve non-material SOL

From Extract 5: “Greater work-life balance for workers” 🡪 more time for themselves and with their family 🡪 improve non-material SOL

From Extract 5; “Ride-sharing services may also generate positive externalities. For example, they could reduce parking congestion 🡪 easier to find parking 🡪 improve non-material SOL.

Anti-thesis: Disadvantages of the introduction of private-hire car services

**1. SOL worsen for workers + in the LR may lead to higher government expenditure**

From Extract 5: “lack of benefits and protection posing headaches for policymakers. For instance, in Singapore, the lack of Central Provident Fund (CPF) contributions, a core pillar of the Republic’s social security system has implications for home ownership and healthcare.”

Grab and Uber drivers lack healthcare, retirement benefits or have insufficient savings in their CPF for retirements 🡪 lack access to affordable healthcare + harder to own a home + not enough savings when they retire 🡪 worsen their current and future material SOL and non-material SOL

In the LR, government may incur higher government expenditure to ensure that these workers have access to housing and healthcare service and are able to retire comfortably 🡪 worsen Singapore’s fiscal budget.

**2. Underemployment**

From Extract 5: “structural challenges such as a mismatch between skills and jobs may nudge workers into temporary freelance work.” Private-hire car service firms such as Uber and Grab may be relying on the very people who are structurally unemployed or are suffering from demand-deficient unemployment. They are forced to take up these freelance/part-time and low-paying work because they cannot find full-time jobs that make use of their skills. Underemployment occurs as they could be working fewer hours/not fully utilising their skills as they would like to.

Overall Evaluation

The advantages of the introduction of private-hire services outweighs the disadvantages in Singapore. From the economic angle, the introduction of private-hire care services clearly brings about improved consumer welfare. Furthermore, facilitated by technology, we can expect the gig economy, and the introduction of such services similar to the private hire car services to keep growing.

Hence, the challenge for the government is to implement policies to maximise the advantages and minimise the disadvantages. For instance, Singapore government need to ensure that employees’ welfare are taken into account by reviewing its labour laws to protect the interests of workers working in the private-hire car services industry/the gig economy.