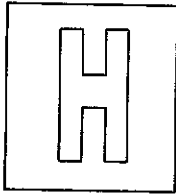


Candidate Name: _____

Class Adm No

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2024 Preliminary Examinations Pre-University 3

ECONOMICS**9570/01**

Paper 1: Case Study

28 August 2024

Additional Materials: Answer Booklet

2 hours 30 minutes

READ THESE INSTRUCTIONS FIRST

Write your name and class on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer all questions.

You are reminded of the need for clear presentation in your answers.

An answer booklet will be provided with this question paper. You should follow the instructions on the front cover of the answer booklet. If you need additional paper, ask the invigilator for a continuation booklet.

The number of marks is given in brackets [] at the end of each question or part question.

This question paper consists of 9 printed pages and 1 blank page.

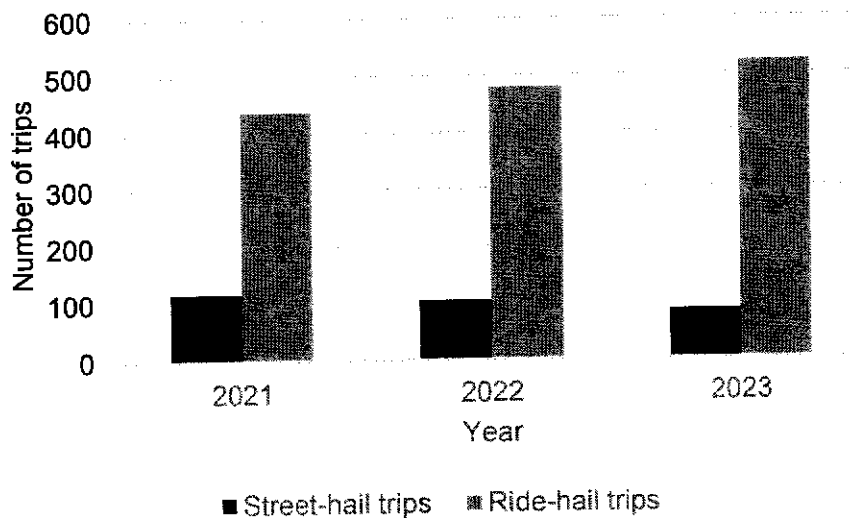
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2

Answer all questions.

Question 1: Ride-hailing and taxi industry in Singapore

Figure 1: Average daily number of street-hail trips and ride-hail trips (annualised)



**Street-hail refers to rides flagged down on the street or hired at taxi stands. Only taxis are allowed to provide street-hail rides, with metered fare calculated based on the distance travelled, and surcharges may apply.*

Ride-hail refers to rides that are booked (e.g. via app or call booking). Both taxis and private-hire cars are allowed to do ride-hail jobs. Ride-hail trip fare can be metered fare or a flat fare, depending on what is chosen at the point of booking.

Source: Land Transport Authority Singapore, accessed on 26 July 2024

Extract 1: Taxi versus ride-hailing market in Singapore

Many consumers today choose booking a car on ride-hailing platforms over taxis as they prefer the certainty of knowing the fare in advance – unlike a metered fare, and the option to compare prices between different mobile applications (apps).

“The market has shifted very decisively towards ride-hailing,” said Prof Theseira. “Booking through an app is the way most consumers in Singapore want to go.”

Aside from a large number of potential passengers on apps, drivers are also choosing ride-hailing due to the cheaper rental of a private car compared with a taxi.

Taxi companies, too, have been adapting, as the two sides try to offer the best of both worlds to cater to different consumers. For instance, the booking platforms of taxi firms now have a flat-fee model, which mirrors the ride-hailing fare model, and gives users an option other than metered fares.

Another difference between booking a car on ride-hailing apps and street-hailing a taxi is the location surcharge. To cushion the impact of fuel prices and ensure a better supply of taxis

at Changi Airport and attractions at Mandai Wildlife Reserve, a hike in surcharge that was introduced more than two years ago was made permanent.

Every trip starting from Changi Airport now attracts a surcharge of \$8 on Mondays to Sundays, 5pm to 11.59pm, and \$6 at all other times. A trip starting from attractions at Mandai Wildlife Reserve has a surcharge of \$5.

Industry players said that location surcharges, which also apply to other areas including Singapore Expo and Gardens by the Bay, are put in place to incentivise taxi drivers to travel there. However, there are fears that increases in such surcharges could turn even more passengers away from taxis and push them towards ride-hailing, causing more taxi drivers to also join the ride-hailing industry.

Source: ChannelNewsAsia, 19 July 2024

Extract 2: Singapore taxis now run on cleaner energy

Around 6 in 10 taxis on Singapore's roads are hybrid or electric vehicles (EVs), up from just 18 per cent three years ago, Senior Minister of State for Transport Amy Khor said on Monday (March 1).

She told Parliament the proportion of cleaner energy vehicles rose from about 20 per cent to 35 per cent in the private-hire car sector during the same period of January 2018 to January this year.

Responding to a question from Workers' Party MP Dennis Tan (Hougang), Dr Khor said the Ministry of Transport and Land Transport Authority will continue working with industry players to ensure the entire fleet makes the transition to cleaner energy vehicles.

Last year, ride-hailing trips here generated an estimated 300,000 tonnes of carbon emissions, or about 4 per cent of the estimated 7 million tonnes generated by the land transport sector.

Earlier this month, the Government announced several new targets and incentives to promote the use of electric vehicles as part of the inter-ministerial Green Plan 2030. They included a revised target of building 60,000 charging points across the island over the next nine years, more than double its original target of 28,000.

Source: The Straits Times, 2 March 2021

Extract 3: The Competition and Consumer Commission of Singapore (CCCS) issues provisional ruling on Grab's proposed takeover of Trans-Cab

The CCCS's provisional ruling

Ride-hailing giant Grab's proposed takeover of taxi operator Trans-Cab will significantly weaken rival ride-hailing platforms here, which in turn could lead to higher prices for passengers and drivers, said the Competition and Consumer Commission of Singapore (CCCS), Singapore's competition watchdog.

Issuing its provisional decision on the proposed acquisition after an in-depth review, the CCCS said that Grab's purchase of Trans-Cab, which is Singapore's third-largest taxi operator, will deprive other ride-hailing platforms of an important source of drivers at a time when the industry is facing a driver shortage.

If Grab's proposed takeover of Trans-Cab goes through, Trans-Cab drivers will effectively be renting their vehicles from Grab. Data analysed by CCCS indicates that drivers who rent from vehicle fleets owned by a ride-hailing platform such as Grab tend to use that particular platform more and are less inclined to use other rival platforms.

Grab may also employ various strategies to induce Trans-Cab drivers to increase their use of Grab's platform, which will significantly restrict rival platforms' access to these drivers after the merger. The shortage of drivers as well as the high costs of maintaining a large vehicle fleet are likely to affect the ability of rival platforms to fulfil trip requests and, over time, make them less attractive to passengers and drivers.

The CCCS added that the lower ability of rival platforms to expand the scale of ride-hailing services offered will weaken competitive constraints exerted by rival ride-hail platforms on Grab. Due to less competition in the ride-hailing industry, drivers on both Grab and rival ride-hail platforms could face higher commissions and fees, while passengers may have to contend with higher fares and fewer options.

Grab and Trans-Cab's earlier response

Both Grab and Trans-cab have said that the proposed acquisition will not result in a "substantial lessening" of competition in the ride-hailing market. This is because there is minimal overlap between the two firms, a lack of prohibitive barriers to entry and the fact that both drivers and riders can easily switch to other ride-hailing platforms.

Grab further shared that "digitalising Trans-cab's fleet will improve driver productivity and taxi availability so that consumers can get a ride more easily. This will also improve driver earnings." Trans-cab drivers will also continue to have the flexibility to earn through multiple ride-hailing platforms and pick up rides through street hailing.

Source: Adapted from The Straits Times, 11 July 2024 and Mothership.sg, 13 July 2024

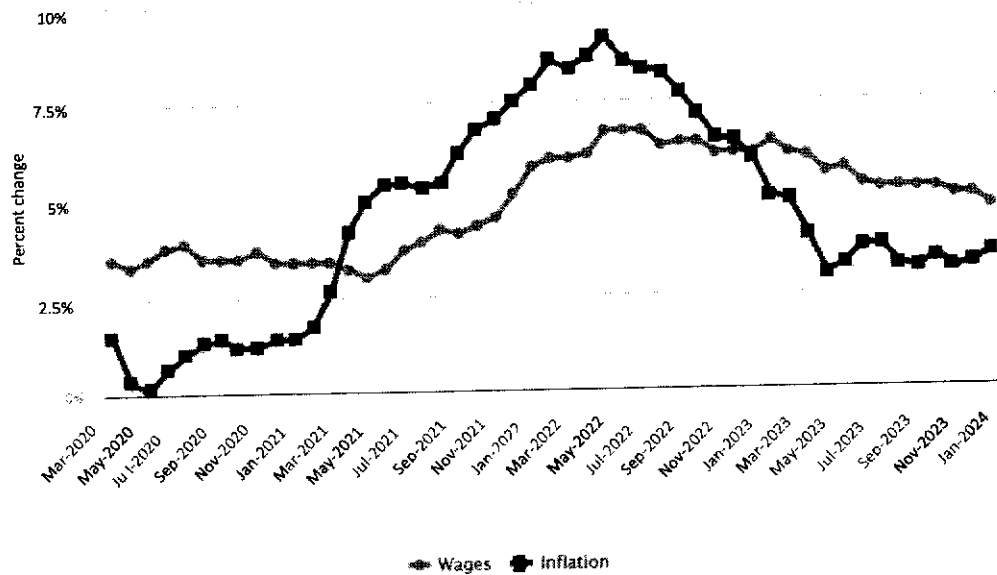
Questions

- (a) (i) With reference to **Figure 1**, state the change in the number of street-hail trips and ride-hail trips from 2021 to 2023. [1]
- (ii) Using **Extract 1** and a demand and supply diagram, give two reasons for the trend observed in the ride-hailing market in (a)(i). [4]
- (b) Define price discrimination and explain why imposing location surcharges for taxi rides can be considered a form of 3rd degree price discrimination. [3]
- (c) Using a diagram, explain how carbon emissions can cause market failure in the ride-hailing market. [4]
- (d) Discuss whether rival firms will be disadvantaged by Grab's proposed takeover of Trans-Cab. [8]
- (e) Discuss the factors a government should consider when adopting policies to address market inefficiencies caused by market dominance in the ride-hailing market. [10]

[Total: 30]

Question 2: Navigating Economic and Environmental Challenges

Figure 2: Inflation rate and growth of nominal wages in the United States from March 2020 to March 2024



Source: Statista, 2024

Extract 4: Why is inflation in the US so high?

Inflation in the US hit 8.6%, one of the highest rates in the world. Many of the forces driving inflation the previous year - such as supply disruptions from Covid and higher food prices after severe storms and drought hurt harvests - were not unique to the US. High demand in the US was driven by the massive \$5tn (£4.1tn) in spending the US government approved to shield households and businesses from the economic shock of the pandemic.

Since US households were bolstered by the stimulus spending by the government, rising prices were not widely felt as a cost-of-living crisis last year, despite wage gains lagging. But as savings get spent, some households are feeling the impact of rising prices. Mr Biden has pointed the finger at the war in Ukraine, which has hit oil supplies and exports of commodities like wheat, driving up prices and spreading the pain around the world.

With few other options to address surging prices, President Biden is weighing whether to roll back some of the tariffs imposed on Chinese goods. An influential study this year predicted that a move to lift tariffs could save households \$797 a year, but administration officials say the actual effect would most likely be far smaller, in part because there is no chance Mr. Biden will roll back all the federal government's tariffs and other protectionist trade measures.

Source: BBC News, 14 June 2022

Extract 5: Japan's Easy Monetary Policy

While central banks around the world are raising interest rates aggressively to try to tame decades-high inflation, with its own inflation rate near 3%, Japan has stuck mainly to using fiscal measures, or government spending, to counter that challenge. The Bank of Japan stuck to its longstanding policy of keeping its benchmark interest rate at minus 0.1%.

On the other hand, the US Federal Reserve has been aggressively raising borrowing costs to combat chronic inflation, raising interest rates five times this year. It's set to do so again next week and in December, while warning that the hikes will likely bring higher unemployment and possibly a recession. The widening gap in the interest rates between the US and Japan, means that the value of the dollar has risen sharply as investors seek higher yields and a "safe haven" from market turmoil.

Japan's central bank has kept interest rates near zero for years, trying to raise inflation to a target rate of 2% and spur what it calls a "virtuous cycle" of economic growth by getting consumers and businesses to spend and invest more. Even though prices finally have risen beyond the target, the central bank is forecasting they will again fall. With its major trading partners raising interest rates, Japan's central bank is monitoring for signs that these rate hikes elsewhere might lead to recessions in these economies.

Source: AP News, October 28, 2022

Table 1: Japan: Selected Economic Indicators (2019 – 2022)

	2019	2020	2021	2022
Real GDP growth rate (%)	-0.40	-4.15	2.56	0.95
Unemployment rate (%)	2.35	2.81	2.83	2.60
Inflation rate (%)	0.47	-0.03	-0.23	2.50
Trade Balance (US\$ b)	-14.81	-13.59	-26.21	-160.05

Source: Macrotrends, 2024

Extract 6: US-Europe trade tensions heat up over green subsidies

Joe Biden's administration hopes to unleash a green revolution by offering hundreds of billions of dollars in subsidies to clean energy companies, but the US president's flagship legislation also threatens to spark a fresh trade war. The Inflation Reduction Act, which was passed by US Congress last summer, earmarks around \$369bn in grants, loans and tax credits for the rollout of renewable energy and clean technologies across the US.

Since the law passed, \$90bn of investment has been committed to clean energy projects in the country, ranging from solar panel factories to electric vehicle plants and battery hubs. And companies are rewarded – as long as the products and parts they manufacture are made in America.

As a result, the law has alarmed US trading partners, including Europe and Japan, who fear they will lose out to the US on new jobs and business investment. French President Emmanuel Macron said recently that the new climate law threatened to "fragment the West". European Union officials have also accused Washington of discriminating against European companies and breaking global trade rules overseen by the World Trade Organization — particularly in the electric vehicle sector, where companies score the full tax credit if they manufacture cars in North America.

In response, the EU is working on its own raft of green subsidies, beginning with proposals to loosen up the bloc's strict state aid rules. However, corresponding subsidies on either side of the Atlantic have prompted concerns that companies will "subsidy shop" — playing governments against each other and locating their businesses in the most lucrative domain.

Source: The Financial Times, 27 February 2023

Extract 7: Hard truths about green industrial policy

Governments say targeted funding in green manufacturing and clean energy will boost the economy, create good jobs and enable low-carbon growth. Clean energy innovation and investment in the country would also drive down clean energy costs and reduce demand for fossil fuel. But there are always difficult trade-offs.

Despite spiraling deficits in the US, energy subsidies under the Inflation Reduction Act (IRA) will be financed with still more government debt. With the increase in interest rates to normal levels, financing costs will soar, adding an estimated \$500 to \$800 billion to the bill costs, almost as much as the subsidies themselves.

Also, the decarbonisation of the economy may not create as many decent jobs as initially expected. In the US, both car companies and the United Auto Workers union have warned that the shift to manufacturing EVs, which require fewer parts, could lead to job losses.

At the same time, the growth of green industries can result in other environmental harms. For example, the production of semiconductors, which are at the heart of clean tech, is energy-, water-, and land-intensive and releases perfluorocarbons and other potent greenhouse gases into the atmosphere.

Source: Eco-Business, 28 Nov 2023

Questions

- (a) With reference to **Figure 2**, explain one reason for the change in real wage in the US from May 2021 to Nov 2022. [2]
- (b) Using **Extract 4** and an aggregate demand and supply diagram, explain why inflation in the US is so high. [4]
- (c) Explain how tariffs may worsen inflation. [2]
- (d) Using a tariff diagram, explain how Biden's proposal to reduce government tariffs will affect government revenue. [4]
- (e) Discuss whether the easy monetary policy is likely to have a significant impact on the Japanese economy. [8]
- (f) Discuss the extent to which green subsidies would help the US achieve sustainable growth. [10]

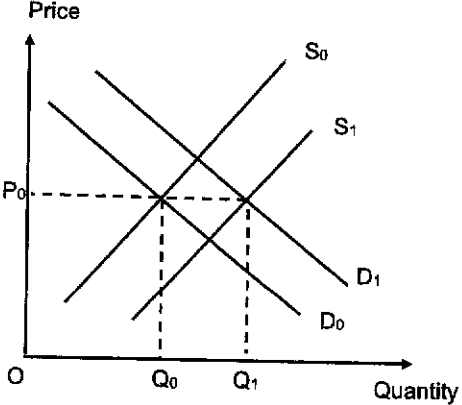
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Suggested Answers

Question 1

(a)(i)	With reference to Figure 1, state the change in the number of street-hail trips and ride-hail trips from 2021 to 2023. [1]
	The quantity of street-hail trips has decreased while the quantity of ride-hail trips has increased [1].
(a)(ii)	Using Extract 1 and a demand and supply diagram, give two reasons for the trend observed in the ride-hailing market in (a)(i). [4]
	<p>Demand for ride-hail rides has increased due to changes in consumers' taste and preferences. Consumers prefer knowing the fare in advance for ride-hail rides as compared to the uncertainty of fares for street-hail rides. [1]</p> <p>OR The increase in surcharges for street-hail rides led to an increase in demand for ride-hail rides, given that street-hail rides and ride-hail rides are substitutes (in demand), with their cross-price elasticity of demand (XED) > 0.</p> <p>Supply of ride-hailing rides has also increased, as more drivers are also choosing ride-hailing due to the cheaper rental of a private car as compared to a taxi. [1]</p> <p>The changes in demand and supply are illustrated by a rightward shift in the demand curve from D_0 to D_1 and a rightward shift of the supply curve from S_0 to S_1, as shown in Figure 1 below. [1]</p> <p>The combined changes in demand and supply results in a change from the original equilibrium (P_0, Q_0) to the new equilibrium (P_0, Q_1) with a larger equilibrium quantity, corresponding to the observed trend of a larger quantity of ride-hail trips. [1]</p> <div style="text-align: center;">  </div> <p>Figure 1: Market for ride-hailing in Singapore</p> <p>2m for explaining any two DD or SS factors. 2m for DD/SS diagram showing shift in DD/SS and explaining change in quantity.</p>
(b)	Define price discrimination and explain why imposing location surcharges for taxi rides can be considered a form of 3rd degree price discrimination. [3]
	Price discrimination occurs when a producer charges different prices for the same product for reasons not associated with differences in cost. [1]

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2024 PU3 H2 Economics (9570) Prelim Paper 1
Suggested Answers

Location surcharges are considered 3rd degree price discrimination as the taxi companies divide their consumers into different groups (by location and time) and charge a different price to each group. [1]

In this case, a surcharge (i.e. different price) is levied on the first group of consumers who hail a ride to or from a specific location such as the airport, while those who hail a ride to other locations do not pay a surcharge. [1]

(c) Using a diagram, explain how carbon emissions can cause market failure in the ride-hailing market. [4]

The case of carbon emissions in the ride-hailing market can cause negative externality, which is a form of market failure where resources are not being allocated efficiently. **Negative externalities** refer to the external spillover cost incurred without compensation by third parties, who are neither consumer or producer, arising from the production or consumption of a good. [1]

For instance, carbon emissions from vehicles used in ride-hailing contributes to global warming, which negatively affects third parties who are not compensated for their suffering. These third parties include residents who are not involved in consumption or production in the ride-hailing market. This contributes towards the marginal external costs (MEC) and as a result the marginal private costs (MPC) diverges from the marginal social costs (MSC) as $MSC = MPC + MEC$. [1]

With reference to Figure 2, assuming that there are no positive externalities in the consumption and production of ride-hailing, MPB is equal to MSB. When left to the free market, the consumption and production of ride-hailing would be at the level where MPB equates MPC (point E) at OQ_e . However, the socially optimum level of consumption and production of ride-hailing is at OQ_s , where MSB equates MSC (point D). Since $OQ_e > OQ_s$, there is overproduction and overconsumption at the free market equilibrium.

For the quantity in between Q_s and Q_e , MSC is greater than MSB, suggesting that the cost to society is greater than the benefit received from the consumption and production of ride-hailing. This overproduction and overconsumption of ride-hailing due to negative externality results in a **deadweight loss**, which is indicated by the shaded area CDE. [2]

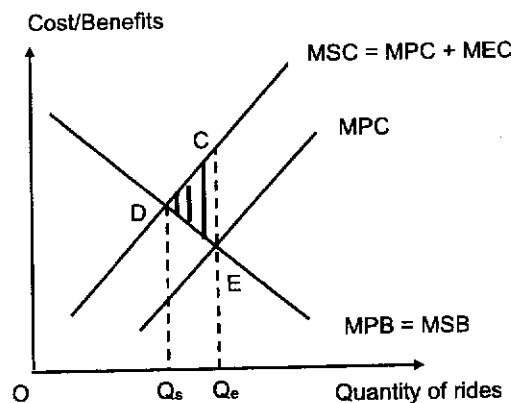


Figure 2: Negative externality

(d) Discuss whether rival firms will be disadvantaged by Grab's proposed takeover of Trans-Cab. [8]

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Suggested Answers

Command word	Discuss – present 2 sides with an evaluative conclusion
Concept	How rival firms will be disadvantaged by lower profits (i.e. lower TR or higher TC)
Context	Ride-hailing industry
<p>R1: Rival firms will be disadvantaged due to lower demand, lower AR/MR and hence lower profits.</p> <p>R2: Rival firms will be disadvantaged due to higher AC/MC and hence lower profits.</p> <p>Evaluative conclusion: Substantiated judgment on whether rival firms will be disadvantaged.</p>	
Requirement	Suggested Answer
Introduction	<ul style="list-style-type: none"> Firms are assumed to be profit-maximisers. Rival firms include other ride-hailing providers and taxi companies. Grab's takeover of Trans-Cab will affect profits of rival firms through reduced revenue and higher costs
R1: Rival firms will face lower demand, lower revenues and hence lower profits (TR – TC).	<ul style="list-style-type: none"> Grab becoming a larger firm will mean they have greater economies of scale resulting in a lower unit cost of production. This is due to cost savings by having their maintenance workshops service a larger fleet of vehicles, or spreading out their advertising costs over a larger fleet of vehicles. This would allow Grab to offer rides for a lower price and be more readily available to respond to customers' ride-hailing requests. Over time, customers would prefer to hail a ride from Grab, given the greater certainty of securing a ride. This would reduce demand for ride-hailing services offered by rival firms, resulting in a fall in average revenue (AR). The demand for ride-hailing services offered by rival firms would decrease and also become more price elastic, due to the better substitute product offered by Grab (D_0 to D_1 in Figure 3 below). As shown in Figure 3, the original market equilibrium of P_0 and Q_0 is determined by the profit-maximising condition of $MC=MR$. With the decrease in demand, the demand or AR curve shifts leftwards and becomes less steep, since demand has also become more price elastic. This would cause the price charged and output produced by each rival firm to then decrease (P_0 and Q_0 to P_1 and Q_1). Since price and output has decreased, the amount of profits has also fallen from the larger shaded area ($P_0 - AC_0 \times Q_0$) to the smaller shaded area ($P_1 - AC_1 \times Q_1$). Evidence: "The shortage of drivers as well as the high costs of maintaining a large vehicle fleet affect the ability of rival platforms to fulfil trip requests and, over time, make them less attractive to passengers and drivers."

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Suggested Answers

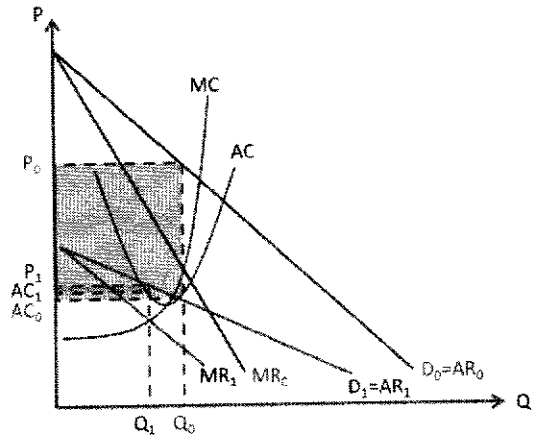


Figure 3: Fall in DD/AR/MR resulting in lower profits

R2: Rival firms will face higher costs and hence lower profits (TR - TC).

- Grab's acquisition of Trans-Cab may "restrict rival firms' access to Trans-Cab drivers".
- This means that Trans-Cab drivers may choose not to drive for rival ride-hailing providers
- Grab being a larger firm may also mean drivers from their rival firms may choose to drive for Grab instead, given the greater demand for rides on the Grab platform
- This means that rival firms will have to pay more to entice their existing drivers to stay with them, or to attract new drivers to drive for them
- This will lead to higher costs of production for rival firms, resulting in an increase in average costs (AC) and marginal costs (MC) of production.
- As shown in Figure 4, the original market equilibrium of P_0 and Q_0 is determined by the profit-maximising condition of $MC=MR$. The increase in average and marginal costs of production of rival firms is shown by the upward shift in AC and MC. This would cause the price charged each rival firm to increase (P_0 to P_1) and output produced to fall (Q_0 to Q_1). Since price and output has decreased, the amount of profits has also fallen from the larger shaded area ($P_0 - AC_0 \times Q_0$) to the smaller shaded area ($P_1 - AC_1 \times Q_1$).

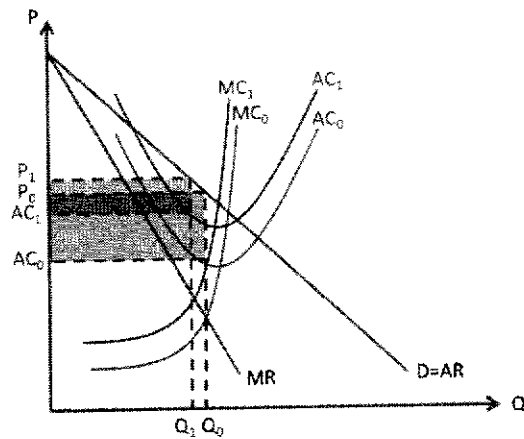


Figure 4: Increase in AC/MC resulting in lower profits

2024 PU3 H2 Economics (9570) Prelim Paper 1
Suggested Answers

	<p>Evaluative conclusion</p>	<p>Rival firms may benefit from higher revenue or lower costs due to spillover effects of Grab's strategies to increase its own profits.</p> <ul style="list-style-type: none"> • For example, Grab's marketing efforts may change consumer's preference for taxi trips to ride-hailing trips, hence increasing demand and AR for rival firms offering ride-hailing trips. • <i>(Alternative example: lower TC)</i> Grab's efforts at lowering costs and improving productivity may also benefit other ride-hailing providers, e.g. those who do not already own a platform and can use Grab's platform to provide services OR rival firms may be able to copy innovation efforts since barriers to entry to join the rail-hailing market may be low (according to Grab's response in Extract 3).
<p>(e) Discuss the factors a government should consider when adopting policies to address market inefficiencies caused by market dominance in the ride-hailing market. [10]</p>		
	<p>Command word</p>	<p>Discuss – present 2 sides with an evaluative conclusion</p>
	<p>Concept</p>	<ul style="list-style-type: none"> • Decision-making framework: Benefits, costs, constraints, unintended consequences • Government intervention of market dominance • Allocative inefficiency, productive inefficiency, dynamic inefficiency
	<p>Context</p>	<p>Ride-hailing industry</p>
<p>R1: Benefits of government intervention due to market dominance in the ride-hailing market EV R1: Limitations (constraints and unintended consequences) of government intervention R2: Costs of government intervention due to market dominance in the ride-hailing market EV R2: Possible mitigating actions taken by government to overcome costs of intervention Evaluative conclusion: Substantiated judgment to weigh the factors raised in the answer.</p>		
	<p>Requirement</p>	<p>Suggested Answer</p> <p>Introduction A government should adopt the decision-making framework and consider the benefits, costs, constraints, unintended consequences of intervening in the market to address market inefficiencies caused by market dominance, which include allocative inefficiency, productive inefficiency and dynamic inefficiency.</p> <p>R1: Benefits of government intervention due to market dominance in the ride-hailing market</p> <ul style="list-style-type: none"> • A government can consider the benefits of intervening in the market to address market dominance. • Market dominance cause market failure due to allocative inefficiency as the price exceeds the marginal cost ($P_0 > MC_0$) at the profit-maximising equilibrium of P_0 and Q_0. This means that consumers value the last unit of the good more than it costs to produce it. There is underproduction and the socially optimal output level Q_s is higher than the equilibrium output level Q_e. In Figure 5, Q_s is the socially optimal output, and the shaded area shows the deadweight loss due to underproduction.

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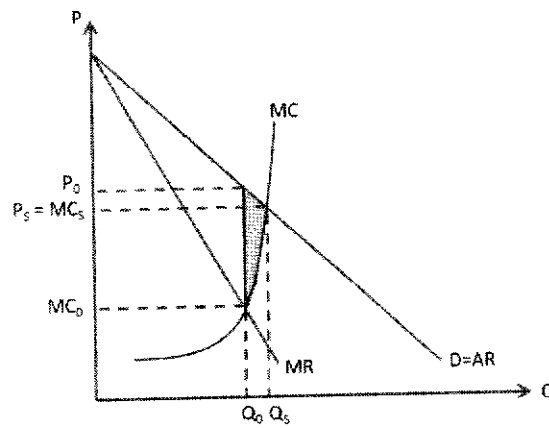


Figure 5: Deadweight loss due to allocative inefficiency caused by market dominance

- A government aims to eliminate the underproduction and deadweight loss by intervening in the market to achieve the socially optimal output level.
- For example, a government can adopt **price regulation** by setting a maximum price where price (P) equals to marginal costs (MC). With reference to Figure 5, at $P_s = MC_s$, the output demanded would be Q_s . This is the socially optimal level of output. The original deadweight loss of the shaded area is hence averted and **allocative efficiency** is achieved.
- (Alternative policy) A government may also seek to increase competition by lowering barriers to entry or enacting legislation/deregulation to encourage more firms to compete with dominant firms.
- The increase in competition will result in lower profits for dominant firms. This will increase the incentive for firms to achieve **productive efficiency**, which is achieved when a given level of output is produced at the lowest cost. This is because the higher level of competition forces firms to cut out wasteful spending.
- At the same time, the higher levels of competition may result in **dynamic efficiency**, which is when firms invest in technology so that productivity and product quality will improve over time. This is because firms will have the **incentive** to innovate due to competition to maintain their market power.

EV R1:
Limitations
(constraints
and / or
unintended
consequences)
of government
intervention

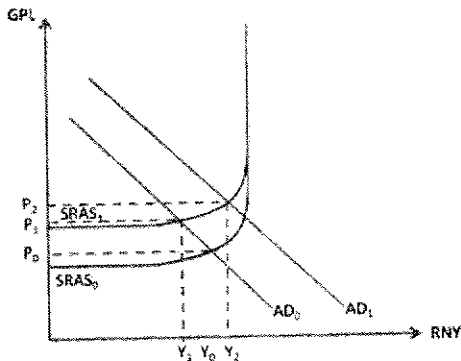
- However, there are some limitations of government intervention to solve market failure due to market dominance.
- The government may have **imperfect information** on the socially optimal price and output levels. Price that is regulated to be too high or low would still be allocatively inefficient.
- (Alternative limitation) There may also be **time lag** between the introduction government intervention and when the measure is effective. This may be due to bureaucracy and red tape due to time taken to implement the policy, effectiveness of enforcement measures, or time taken for producers to change their behaviour or adjust production methods to take into account the new policies.

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Suggested Answers

<p>R2: Costs of government intervention due to market dominance in the ride-hailing market</p>	<ul style="list-style-type: none"> • A government can also consider costs that may result from government intervention. • As firms now earn less profit, they would also have a lower ability to carry out innovation. This is because there may be a need for firms to invest accumulated profits to conduct research and development to improve the quality products. Without the same level of profits, there would be lower ability to innovate and therefore lower dynamic efficiency. • In addition, smaller firms that result from successful government intervention will mean that they experience higher costs of production due to the loss of internal economies of scale. • For example, a smaller ride-hailing firm will not be able to capitalise on spreading out their advertising costs over a larger fleet of vehicles, resulting in a higher unit cost of production. • The higher costs of production can be shown using Figure 4 in Q1(d), where both the average and marginal costs of production increases, leading to a higher price and lower output at the market equilibrium. • This would result in consumers being worse off, since they now have to pay a higher price, and assuming that their demand for ride-hailing rides remains unchanged, this would mean a lower consumer surplus.
<p>EV R2: Possible mitigating actions taken by government to overcome costs / constraints of intervention</p>	<ul style="list-style-type: none"> • Since there are costs of intervention and potential government failure due to government intervention, a government should consider whether there is a need and urgency to address market failure in this market as compared to other markets. • This may mean comparing deadweight loss arising from different market failures, and choosing to intervene in markets with the largest market failure.
<p>Evaluative conclusion</p>	<ul style="list-style-type: none"> • Based on the Theory of Contestable Markets, governments can prioritise ensuring there are low barriers to entry and exit in the market to enable a contestable market, so that a dominant firm would behave competitively due to the threat of potential competition. • This will mean that they will not intervene in specific markets directly so as to mitigate issues related to government failure.

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Suggested Answers

Question 2

(a)	<p>With reference to Figure 2, explain one reason for the change in real wages in the US from May 2021 to Nov 2022. [2]</p>
	<p>Real wages fell from May 2021 to Nov 2022 as inflation rate was higher than the nominal wage growth.</p>
(b)	<p>Using Extract 4 and an aggregate demand and supply diagram, explain why inflation in the US is so high. [4]</p>
	<ul style="list-style-type: none"> • "Supply disruptions from Covid and higher food prices after severe storms and drought hurt harvests", leads to higher cost of production for most industries and SRAS falls, shifting the SRAS curve upwards. [1] • In addition, massive government spending which is a component of AD increases AD, shifting the AD curve to the right. [1]  <ul style="list-style-type: none"> • The decrease in SRAS from SRAS0 to SRAS1 leads to an increase in the GPL from P0 to P1. The increase in AD from AD0 to AD1 leads to a further depletion of stock and GPL rises further to P2. Hence the persistent rise in GPL leads to high inflation in the US. [2m for diagram + explanation]
(c)	<p>Explain how tariffs may worsen inflation. [2]</p>
	<ul style="list-style-type: none"> • Inflation may worsen when tariffs raise the prices of imported raw materials which will raise the cost of production of local products which use these resources. [1] • The AS will fall, leading to a shortage of goods and services and hence a rise in the general price level (cost-push inflation). [1]
(d)	<p>Using a tariff diagram, explain how Biden's proposal to reduce government tariffs will affect government revenue. [4]</p>
	<ul style="list-style-type: none"> • Tariffs are taxes levied by the government on imported goods. A reduction in tariff will shift the world supply curve of imports downwards from $S_{world} + tariff$ to $S_{world} + reduced\ tariff$ [1m with diagram] • Assuming the tariff is a specific tax, government revenue from the tariff is given by the quantity of import multiplied by the per unit tariff. [1] • As seen in Fig. 1 below, before the tariff reduction, government revenue is area (A + B). After the tariff reduction, government revenue is area (C + B + D). [1] • Whether the government revenue rises or falls will depend on the price elasticities of demand and supply. [1]

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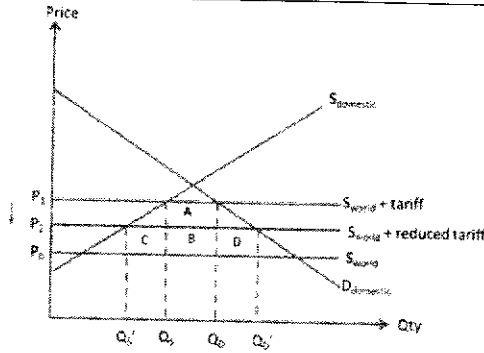


Fig. 1: Impact of Tariff Reduction

(e) Discuss whether the easy monetary policy is likely to have a significant impact on Japanese economy. [8]

Command word	<i>Discuss – present 2 sides with an evaluative conclusion</i>
Concept	<i>Easy monetary policy – cut interest rate Impact on economy -> RNY, GPL, employment, BOT</i>
Context	<i>Japanese economy</i>
R1: Explain how easy monetary policy has a significant impact on Japanese economy	
R2: Explain how easy monetary policy does not have significant on the Japanese economy	
Evaluative conclusion: Take a stand and justify	

Requirement	Suggested Answer
Introduction - Give overview	Japan is adopting an easy monetary policy where they choose to maintain a negative interest rate which has impacts on the four macro aims of the government.
R1: Explain how easy monetary policy has a significant impact on Japanese economy	<p><u>Easy monetary policy will have a significant impact on Japanese economy</u></p> <p>As negative interest rate leads to both low cost of borrowing and low returns on savings, consumers are more incentivised to borrow to purchase big-ticket items and less incentivised to save. This increases consumption expenditure (C). At the same time, with the lower cost of borrowing, firms would find it more profitable to invest (rightward movement along the MEI) and investment expenditure (I) increases.</p> <p>The increase in C and I would be significant due to Japan's large population size. This would then lead to a significant increase in AD, causing the AD curve shifts to the right from AD₀ to AD₁ as seen in Fig. 2 below.</p> <p>The rise in AD due to the easy monetary policy would lead to an unplanned depletion of stock which would put an upward pressure on the general price level. Firms will increase production and require more factors of production. This increases the real national output and income. Income-induced consumption increases, and through the multiplier process, the economy would experience a multiplied increase in AD and real national income which increases from Y₀ to Y₁, achieving actual economic growth, since Japan has unemployed resources. The derived demand for labour will reduce cyclical unemployment.</p>

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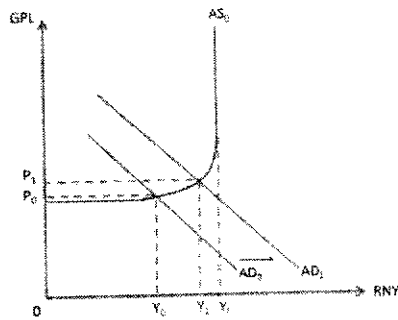


Fig. 2: Impact of easy monetary policy

In the long run, the increase in investment may result in the accumulation of capital stock and increase the productive capacity of the economy. This would lead to potential growth as LRAS increases. Coupled with the increase in actual growth, Japan can then enjoy sustained economic growth which is non-inflationary. Hence, easy monetary policy will have a significant impact on Japanese domestic economy.

The impact on BOP would also be significant. Extract 5 mentions that the US is raising interest rates aggressively while Japan has maintained her interest rate at -0.1%. As the difference in interest rate is large, there will be a large outflow of hot money from Japan to the US. This will lead to a large increase in supply of Japanese yen in the forex market as Japanese residents sell yen for USD to put money into US banks. Assuming the demand for yen remains constant, it would lead to a significant depreciation of yen, that is, more yen is needed to buy one unit of USD.

With a depreciation, Japanese exports become much cheaper in foreign currency, causing foreigners to buy more exports. Thus quantity demanded of exports increases. At the same time, imports becomes more expensive in yen, causing Japanese consumers to buy less imports. Thus, quantity demanded of imports decreases. Assuming the Marshall-Lerner condition holds ($|PEDX + PEDM| > 1$), net exports (X-M) would increase significantly with the sharp depreciation of the Japanese yen. This would result in a significant improvement in the balance of trade (BOT) position.

R2:
Explain how easy monetary policy will not have a significant impact on Japanese economy

However, Japanese households and firms may have a pessimistic outlook of the economy. Households may not be confident about earning higher future incomes, while producers may not be confident about future profits. As such, consumption and investment expenditure are therefore likely to be interest-insensitive and households and firms are not very responsive to a negative interest rate resulting in limited increase in C and I, and hence a limited increase in AD and actual growth. Hence, easy monetary policy may fail to have significant impact on the Japanese economy.

Depreciation of the Japanese yen may also not lead to an improvement in the BOT in the short run as the Marshall-Lerner condition may not hold in the short run. This is because firms and consumers need time to adjust the quantity demanded of exports and imports to the changes in prices (e.g., if they were contractually bound to purchase a certain quantity of goods and services). So, the demand for both exports and imports could be very inelastic in the short run, causing $|PEDX + PEDM| < 1$. In that case, the BOT would actually

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	worsen in the short run before improving in the long run. Hence, the impact on BOT in the short run will not be significant. [Other relevant limitations like small multiplier size are also accepted.]
Evaluative Conclusion: - stand & justification	Overall, easy monetary policy is unlikely to have significant impact on the Japanese economy. Japan is in a liquidity trap as interest rates are near zero and even after years of easy monetary policy, Japan is still experiencing negative or slow growth from 2019 to 2022 as shown in Table 1. This shows that easy monetary policy has been ineffective in stimulating growth and hence the impact is likely to be insignificant.

(f) Discuss the extent to which green subsidies would help the US achieve sustainable growth. [10]

Command word	Discuss – present 2 sides with an evaluative conclusion
Concept	Green subsidies – expansionary fiscal policy Sustainable growth
Context	US economy
R1: Explain how green subsidies helps the US achieve sustained growth E1: Limitations of green subsidies in achieving sustained growth R2: Explain how green subsidies helps the US achieve sustainable growth E2: Limitations of green subsidies in achieving sustainable growth Evaluative conclusion: Take a stand and justify	

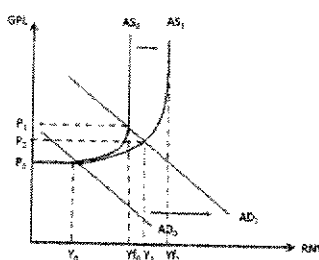
Requirement	Suggested Answer
Introduction - Define sustainable growth	Sustainable economic growth refers to a sustained rate of growth that can be achieved without causing other significant economic problems, such as depleted resources and environmental problems, high inflationary pressure or debt burden for future generations.
R1: Explain how green subsidies helps the US achieve sustained growth	<p>According to Extract 6, green subsidies refer to the grants, loans and tax credits for the rollout of renewable energy and clean technologies across the US under the Inflation Reduction Act. Since the law passed, \$90bn of investment has been committed to clean energy projects in the country, ranging from solar panel factories to electric vehicle plants and battery hubs. Thus green subsidies has led to an increase in government expenditure (G) or investments (I) would lead to a direct increase in AD since G/I is a component of AD.</p> <p>The AD curve will shift rightwards from AD_0 to AD_1 as seen in Fig. 3 below. If there is spare capacity, the increase in G/I would trigger the multiplier effect, which will increase AD and real national income (RNY) by a multiplied amount Actual growth is achieved when RNY increases from Y_0 to Y_1.</p> 

Fig. 3: Impact of green subsidies

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		<p>In the long run, these investments would translate to an increase in quantity of factors of production. This will increase the productive capacity of the economy. Long-run AS therefore increases, as shown by the rightward shift of the AS curve from AS_0 to AS_1, thus achieving potential growth.</p> <p>As a result, sustained growth is achieved, with a further increase in RNY from Y_{f0} to Y_2, and only a slight increase in GPL to P_2 instead of P_1.</p>
	<p>E1: <i>Limitations of green subsidies in achieving sustained growth</i></p>	<p>However, the US green subsidies are seen as protectionistic by US trading partners, including Europe and Japan as firms are required to produce in the US and use only parts manufactured in the US.</p> <p>Protectionism may create a 'beggar-thy-neighbour' effect as the export revenue of its trading partners will fall, leading a fall in AD and hence real output of its trade partners. This would be particularly impactful considering the global economic slowdown. This fall in national income of trading partners may in turn lead to a fall in demand of the US exports (assuming that the exported goods are normal goods). This would lead to a fall in AD and hence a fall in real GDP and negative actual growth for the US.</p> <p>Or</p> <p>Trading partners like the EU could retaliate against protectionist measures by offering green subsidies as they do not want to lose out on new jobs and business investment. This may undo any positive effects from the initial increase in investment and the US may find it difficult to sustain its economic growth.</p> <p>Or</p> <p>However, green subsidies would put a strain on the government budget. There is an opportunity cost in terms of forgone spending on measures that promote other economic objectives such as equity. As such, the US government may not spend sufficiently on policies to promote sustainable growth and this could prevent maximum positive impact.</p>
	<p>R2: <i>Explain how green subsidies helps the US achieve sustainable growth</i></p>	<p>Beyond achieving sustained growth, investments in the clean energy can also lead to a cleaner environment and help to reduce the severity of climate crisis which have a negative impact on health, productivity and efficiency of economies of future generations.</p> <p>In addition, the massive investment in clean energy will lead to an increase in the supply of clean energy, resulting in cheaper cleaner energy. Since they are substitutes of fossil fuel or oil, the demand for oil is expected to fall, lowering the rate of depletion of natural resources. Thus sustainable growth is achieved.</p>
	<p>E2: <i>Limitations of green subsidies in achieving sustainable growth</i></p>	<p>There could be unintended consequences as the construction of these green energy facilities might result in substantial carbon emissions. Also, the new high-tech clean energy hardware will require not just massive amounts of base metals including copper, iron and nickel, but previously lesser-used rare elements such as lithium and cobalt. This could lead to more rapid depletion of such natural resources and growth is therefore unsustainable.</p>

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	Evaluative conclusion	Overall, the extent to which green subsidies can help the US to achieve sustainable growth will depend on whether the government can maintain fiscal sustainability when competing for investments with other countries. It is also crucial for the government to encourage innovations to minimise the unintended consequences and ensure a relevant workforce to take up the new job opportunities in the green industry.
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