

ECONOMICS

Y6 H2 Timed Practice 2026

Case Study Question

a) i) Identify and explain a fixed cost and a variable cost for a pharmaceutical company. [2]

Variable cost – cost of variable factors like biobags or filters or sterilisation gear which increases as the output of pharmaceutical products increases. [1]

Fixed cost – An example of a fixed cost is the rental of manufacturing facilities which does not increase with the output level. [1]

Examiners' comments

Students are advised to use very explicit and clear examples which are related to a pharmaceutical company and explain how they are variable or fixed costs.

ii) Explain how fixed costs may have an impact on the size of firms in the pharmaceutical industry. [2]

If there are high fixed costs involved, e.g. purpose-built factories with specialised equipment to manufacture drugs, then the size of the firm is likely large. [1]

This is because high fixed costs would imply a high startup cost for the firm (for instance the cost to purchase expensive machinery). This will require a firm to have a large output level before its average cost of production start to fall significantly - the firm reaps internal Economies of Scale (Technical – indivisibility of factors of production) over a large output level.

OR

High fixed costs is a large start-up cost which is a high barrier to entry preventing the entry of small firms and this allows incumbent firms to have large output and therefore size of firm is likely large. [1]

Examiners' comments

This question was poorly done. Most candidates had the correct idea about iEOS but failed to explicitly bring in the concept of spreading startup cost over large output such that the firm faces lower average cost of production.

b i) With reference to Figure 1, describe the changes in the level and composition of national healthcare expenditure in USA. [2]

The level of National Health Expenditure (NHE) has increased. [1]

In terms of composition, out-of-pocket expenses has significantly fallen whereas health insurance's share of National Health Expenditure (NHE) has increased significantly. [1]

ii) Discuss whether demand or supply factors are more significant to account for the change in the level of national healthcare expenditure in USA. [8]

Identify that Total Expenditure = $P \times Q$ and that national healthcare expenditure in USA has risen.

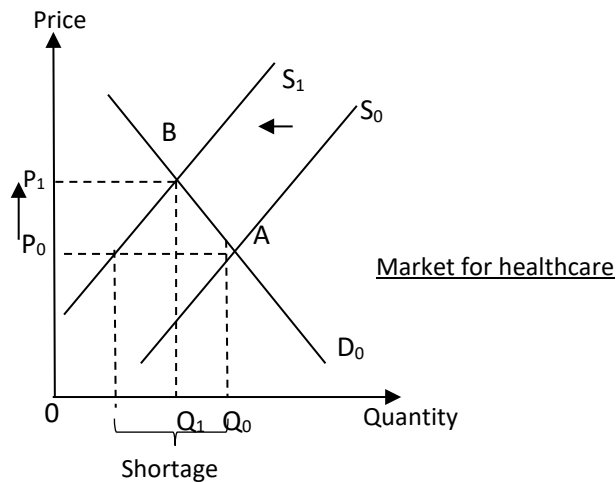
Note: Students need not explain every factor. A total of 2 distinct demand and supply factors with PED discussed is suffice and the link must be made to total expenditure (TE).

Supply Factors

(1) Ext 1 P7: “continued staff shortages with more healthcare workers choosing to leave the profession” → with increasing net number of healthcare workers leaving the profession, possibly due to the long hours and tedious nature of work → results in fall in labour supply in the market and that is likely to drive up wage rate. Labour costs constitute a large portion of healthcare providers’ cost of production and thus this increases the cost of production of healthcare goods and services.

(2) Ext 1 P3: The use of newer procedures to treat illnesses which involve use of new advanced technology will increase the COP of healthcare institutions too. Use of new drugs which are highly expensive because of patents contributed to this rise in COP too.

Explanation of how the fall in Supply causes total expenditure to rise: As a result, firms are less willing and less able to supply at each and every price level. Hence, Supply curve shifts leftwards from S_0 to S_1 .



Brief price adjustment mechanism: At the prevailing price, with a fall in supply, quantity demanded is greater than quantity supplied and that leads to a shortage in the market. Consumers will bid up price and firms will start to increase output and a new equilibrium will be reached at a higher price P_1 and lower output Q_1 .

The demand for healthcare is price inelastic since there are few substitutes to improve health outcomes when one is ill, apart from consuming healthcare products and services. Hence the fall in qty demanded (Q_0 to Q_1) is met with a more than proportionate increase in price from P_0 to P_1 . Hence, total healthcare expenditure increases from $0Q_0AP_0$ to $0Q_1BP_1$.

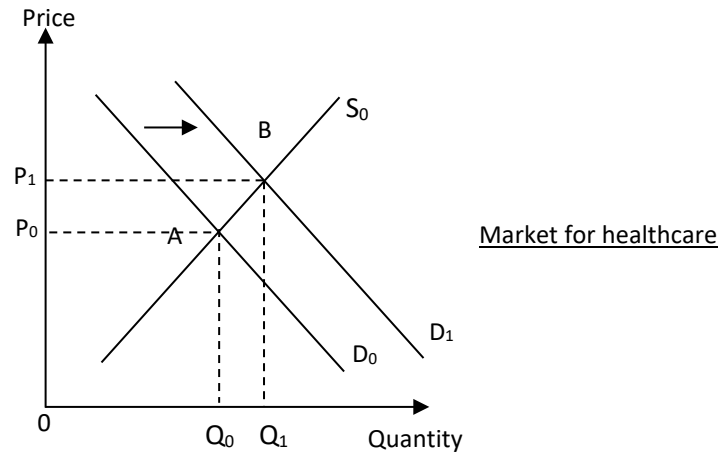
Demand Factors

(1) Ext 1 P4: “Medical advances can improve our health and extend our life, but they can also lead to an increase in spending and the overutilization of expensive technology and drugs.” The longer lifespan of Americans increases the need for more medical care because seniors and elderly are more prone to illnesses and have a higher risk of medical complications when ill → contribute to higher demand for healthcare.

(2) Ext 1 P6: “Another prominent concern is that an increasing proportion of the U.S. population has at least one chronic disease” → there is an increase in the proportion of overweight Americans and this is likely due to the diet and sedentary lifestyle → result in high rate of chronic illnesses like diabetes,

heart diseases, high blood pressure which require long term treatment → greater demand for healthcare

(3) Ext 1 P5: “Moral hazard issues... encourage a high volume of redundant testing and overtreatment.”
→ Consumers whose medical expenses are covered by health insurance may demand additional but unnecessary treatment, procedures or consultation visits to the doctor because they need not bear these additional charges. These costs are borne by the insurance companies and that led to an increase in demand.



The above factors led to an increase in demand for healthcare services → caused a shift in the demand curve to the right. At the prevailing price of P_0 , a shortage arise and through the price adjustment mechanism, there is upward pressure on price to P_1 while quantity increases to Q_1 . Total expenditure increases from $0Q_0A P_0$ to $0Q_1B P_1$.

Evaluation:

Any reasoned and substantiated conclusion on whether demand or supply factors are more significant in leading to a rise in expenditure. For example:

Demand factors are likely to be more significant in the increase in expenditure in USA because increasingly, most medical expenses are paid through insurance policies, and this has resulted in sharp increase and unnecessary expenditures.

Also, in a developed economy like USA which uses plenty of technology and where work is mainly indoor and sedentary and where average lifespan is high, these are strong demand contributors regarding the lifestyle change of an average American leading to increases in expenditure.

Whereas where supply is concern, the government is likely to intervene in the control of monopoly power to prevent profit taking and mark ups by firms as well as the increase in the number of government-run healthcare institutions which can keep prices low.

Therefore, demand factors are likely to be more significant.

Mark Scheme:

Knowledge, Application, Understanding, Analysis		
L1	▪ Major conceptual inaccuracies ▪ Smattering of points not directly linked to question ▪ No reference to case material at all ▪ Journalistic explanation	1 - 3

L2	▪ <i>Good rigour and accurate economic analysis based on price adjustment process, non-price determinants of supply and demand and relevant elasticity concepts</i> ▪ <i>Explicit and sustained application of case evidence</i> ▪ <i>At least one demand and one supply factor each, well discussed with links made to total expenditure</i>	4 - 6
<i>Evaluation/Synthesis (can be in the body and/or in the concluding paragraph)</i>		
E1	• <i>A judgement that considered only either the thesis point(s) or antithesis point(s) and explanation is weak or incomplete</i> • <i>A judgement which is purely theoretical without contextual application</i>	1
E2	• <i>A judgement that is well-reasoned, based on the thesis and anti-thesis points discussed and supported by evidence with accurate economic analysis.</i> • <i>A relevant insight reasoned.</i>	2

Examiners' comments

A significant number of responses did not define total expenditure nor showed sufficient analysis to link to total expenditure. Many simply explain why demand has increased more or supply has fallen more. Others simply indicated a new equilibrium price and quantity without indicating that expenditure is $P \times Q$.

While most responses were able to identify some relevant demand or supply factors as directed by the question, a significant number showed poor understanding of the case material. Many students merely copied or hashed quotes from Extract 4 without explaining the underlying factors which led to changes in demand or supply. For example, "an increasing proportion of the US population has at least one chronic disease...", could be explained as how a sedentary lifestyle or an ageing population in USA, led to increasing incidence of chronic diseases which require long term medical treatment → increase in demand for healthcare. Students are reminded that mere quotes from Extracts cannot replace explanation of the underlying cause.

Candidates must know when to use the PED and PES concepts appropriately when undertaking DD/SS analyses. Many students identified correctly that demand for healthcare is price inelastic in demand and that quantity demanded will fall less than proportionately to the rise in price. However, the link back to the question was poor. PED and PES was simply lumped together without explaining how they affected total expenditure. Students also mistakenly spoke about the importance of PES (inelastic) when demand increases, without realising that total expenditure will rise regardless of PES is inelastic or elastic.

c) (i) Define price discrimination and identify the conditions necessary for price discrimination to take place. [2]

- Price discrimination takes place when different consumers are charged different prices for the same good for reasons not due to cost differences. [1]
- In order to undertake price discrimination, a firm needs to possess market power, ability to identify and segment the market (by having market segments with distinct price elasticities of demand) and ability to prevent arbitrage. (2 conditions suffices) [1]

Examiners' comments

A significant number of scripts did not have an accurate definition of price discrimination – there is a critical omission of the point "no cost difference" in the definition.

(ii) Explain the challenges to a pharmaceutical firm in undertaking price discrimination. [4]

Challenges must be explained in terms of how the conditions of price discrimination may not be fulfilled for the firms to be able to increase or maximise profits. Use of the given context in Extract 4 should be used as far as possible. Any 2 distinct challenges using the context in Extract 4 will be sufficient to score full marks.

The firm is not able to dictate price and not able to charge maximum price that each group is able and willing to pay (based on different PED):

1) In its attempt to segregate the markets, a firm is not able to charge a richer country (which supposedly has lower PED) a higher price. This is because richer countries are also the ones with the greatest negotiating power to demand lower price. This situation is more challenging when transparency of pricing is known to all. Richer countries will be adamant that they be charged at least the same low price offered to all other countries. (for example, the US has implemented a "Most-Favored-Nation" (MFN) drug pricing policy. The US Government has actively struck agreements requiring pharmaceutical companies to index US drug prices to the lowest price they offer anywhere else globally.)

Resale is possible:

2) A push towards transparency may cause arbitrage. Arbitrage can exist through trade or in the underground economy. Consumers may turn to buying from informal sources abroad if they are charged a higher price as compared to a country that is charged a lower price. For those in a country who are charged a lower price, they have an incentive to participate in arbitrage and resell pharmaceutical products at a higher price to make a profit. Hence, information transparency may lead to resale and firms are not able to increase profits through price discrimination.

Examiners' comments

Many scripts simply explained theoretically how firms may not be able to carry out price discrimination or lifted passages from the extract without good application to the challenges of price discrimination by a firm. Students are reminded that contextual explanation is needed to score well.

A handful of scripts wrote extensively about corruption, political tensions and inability to achieve equity or "unfairness" which are not concerns of the firm, a profit maximising entity. Such answers do not address the question of "challenges" faced by the firms in terms of ability to segment the market or charge differentiated prices (maximum price that each group of consumers is willing to pay) in order to maximise profits.

Many scripts also wrote about how price discrimination is challenging due to difficulty in accurately measuring different PED values of the different groups or how within a country, there are rich and poor consumers. This is not a strong argument as firms don't need exact PED coefficients; they only need to separate consumers based on observable characteristics like age, location, average income levels.

d) Extract 2 suggests that governments should waive intellectual-property protections for COVID fighting technologies.

Discuss whether this is justified.

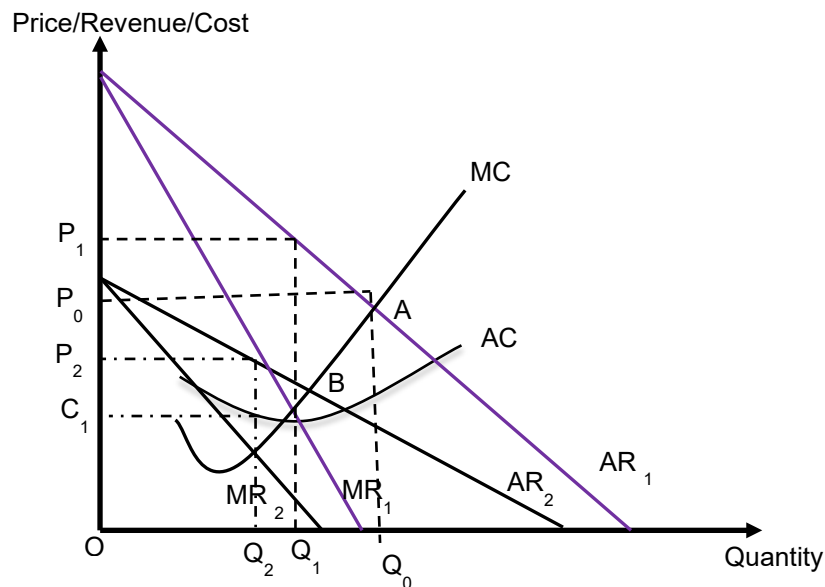
[10]

Introduction: Waiving intellectual-property (IP) protections may be helpful to address issues such as equity or market dominance by facilitating market entry of new firms. But it might also lead to worse outcomes.

Stronger scripts clarified what it means to be justified. Society's welfare, equity concerns, allocative efficiency.

Thesis 1: waiving IP laws might be justified as it mitigates market failure arising from market dominance due to the IP protection

- Prices are high and output low in the market for COVID fighting technologies due to market dominance. IP laws augments market dominance because it affords incumbents legal barriers to entry and allow firms to maintain a large market share.
- The firm makes pricing decision at output level where $MC = MR$ in order to profit maximize. With IP laws, the incumbent firm has a substantial market share and is able to charge a price that is much greater than its MC so as to maximise its profits. Diagrammatically: the firm charges P_1 , the profit maximizing price at output level Q_1 where $MC = MR_1$.
- Waiving IP rules removes legal barriers to entry that facilitates market entry. As such, as more firms enter the market, the number of firms in the market increases while the market share of the incumbent dominant firm fall and price elasticity of demand for the incumbent firm increases as more substitutes are now available in the market.
- This is illustrated by the leftward shift from AR_1/MR_1 to AR_2/MR_2 alongside a corresponding fall in the gradient
- With lower market share and price setting ability, firms produce at profit maximizing output level Q_2 where $MC = MR_2$ and price is at P_2 . As the combined total output in the market increases with new entrants in the market, the market approximates a more allocatively efficient outcome with each firm producing at a price closer to its MC (smaller $P > MC$). A lower price of P_2 will make the drug more affordable for all, especially the lower income economies.



Waiving IP might be justified as it improves equity (access to essential goods and services)

- As noted in extract 2, "deaths, by contrast, are increasingly concentrated in poorer ones, like India" which suggests underconsumption due to excessive income inequality.
- As allocation of resources is ultimately based on dollar votes, for low-income households, they are priced out of the market as they do not possess effective demand for COVID vaccines. Less percentage of the population is vaccinated.
- As pricing power of incumbents are eroded with more entrants (and more substitutes in the market), the consequent fall in price and allows a higher consumption level among low-income households. This helps improve equity in the economy.

Anti-thesis: Waiving IP might not be justified as it negatively affects R&D, Innovation and Dynamic Efficiency

- Engaging in R&D to look for effective cures for or treatment of diseases requires a lot of funds and many of these research projects are “risky” as many do not bear any positive outcomes and even if they do, it is usually after a long period and with high level of expenses. In the extract, it was stated that innovation is costly and risky and that pharmaceutical companies invest heavily in drug development with no guarantee of success. If the patents to prevent new entrants or copycats are removed, then there is insufficient financial incentive of profits for firms to undertake such risks (firms are unlikely to innovate) and patients are worse off without more effective treatments.
- Dynamic efficiency gains are therefore foregone in the long run as the firm is pressured to survive rather than reap supernormal profits that may lead to either greater productive efficiency through process improvements or more product innovation/ quality improvements.
- In the long run, threat to allocative efficiency, dynamic efficiency and loss of innovation renders the choice to waive IP protections unjustified.

[NB: positive externalities as a source of market failure is also acceptable in this question if discussed with use of the given context.]

Evaluation

1. Effectiveness depends on whether IP is the main barrier

Waiving IP protection is justified only if patents are the main barrier limiting vaccine production and access. If firms (especially in developing countries) are instead constrained by manufacturing capacity, technical know-how or shortages of key inputs (as stated in the extract), removing patents alone would have little impact on output or prices. Hence, the extent to which the waiver improves allocative efficiency and equity depends on whether IP protection is the binding constraint.

2. Dynamic efficiency costs are likely to be limited

Although patents normally provide incentives for risky pharmaceutical R&D, this concern is less significant during the COVID-19 pandemic because governments had already substantially reduced firms' risks through subsidies and advance purchase agreements. Furthermore, case evidence suggests Pfizer remained highly profitable even without vaccine profits. Therefore, a temporary IP waiver is unlikely to significantly reduce future innovation, making the dynamic efficiency costs relatively small.

Summative: Overall, waiving intellectual-property protections for COVID-fighting technologies is justified as the unprecedented scale of the pandemic means that improving allocative efficiency by expanding output and reducing prices, as well as enhancing equity through wider access to life-saving technologies and thus vaccines, generates exceptionally large social benefits. Hence, the immediate gains in social welfare from saving lives and containing the pandemic are likely to outweigh the relatively small loss in future innovation incentives.

Mark Scheme:

<i>Knowledge, Application, Understanding, Analysis</i>		
<i>L1</i>	• <i>Glaring conceptual errors throughout</i> • <i>Journalistic explanation throughout - lack links to economic framework</i> • <i>Explanation of thesis and AT points are purely theoretical</i>	<i>1-3</i>
<i>L2</i>	• <i>Discussion is balanced, shows rigour in economic analysis and depth of explanation/elaboration is evident.</i> • <i>Good use of relevant market failure theory/framework.</i> • <i>Effective contextual application.</i>	<i>4-7</i>

Evaluation/Synthesis		
E1	• <i>Judgement which is purely theoretical without contextual application</i> • <i>Judgement that is weak or incomplete</i>	1
E2	• <i>Judgement that is well-reasoned based on case evidence and supported by strong economic analysis.</i>	2-3

Examiners' comments

This question was generally not well done. A number of scripts were journalistic and descriptive in writing, with no use of the needed economic framework and diagram, which could have been used to provide rigour and depth and to score well.

Some students did not understand the nature and main purpose of IP laws. They inaccurately confined their answer to how IP laws allowed incumbent firms to produce large output to reap iEOS, allowed firms to reduce their average COP and lead to lower prices and larger output and therefore is beneficial to consumers. That is certainly not the case here as prices are high and quantity is restricted to the wealthier nations.

Some students also misunderstood the term "waiver of IP protection". This refers to the removal of patents and copyrights for Covid-19 vaccines, not the protection of patents. Many misunderstood this and hence their explanation was the other way round.

Another group of students explained how a waiver of IP protection to reduce BTE allowed many new entrants to make profits and competition will subsequently lead to R&D → new product and process innovations will take place → better encourage new vaccines. Such a line of reasoning is theoretically sound but such scripts need to consider the following 2 points; 1) the entry of new competition also erodes the ability of firms to make supernormal profits which is required to finance R&D, 2) in the context of this case study, the primary objective of IP waiver is to allow other firms to use existing Covid fighting technologies to deal with the pandemic. The removal of the protection would likely make firms question the decision to engage in R&D altogether.

- 1 **Asymmetric information is present in the market for many different products. There are several strategies that firms could undertake to avoid the adverse consequences of asymmetric information. These markets might also benefit from government intervention.**

(a) **Explain, with examples, how asymmetric information can lead to adverse selection and moral hazard.** [10]

(b) **Discuss whether it is necessary for governments to intervene in markets with asymmetric information.** [15]

Part a)

Introduction

Definition of key term(s) found in the question:

- Asymmetric information as a situation where one party in a transaction possesses more or better information than the other party.
- Keep introduction short. Adverse selection and moral hazard can be defined in R1 and R2 respectively.

Requirement #1: Asymmetric information leads to Adverse Selection

- Step 1: Definition of adverse selection:
 - Adverse selection is a market failure arising from hidden information before a transaction takes place, where the less-informed party is unable to distinguish between high-quality and low-quality products.
- Step 2: Explain the causal mechanism from asymmetric information to adverse selection.
 - In the second-hand car market, asymmetric information exists as sellers possess more information than buyers regarding the true quality and condition of their cars.
 - Hidden information before the transaction and incentive to hide by more informed party:
 - For example, sellers know whether a car has been involved in major accidents, has hidden mechanical faults or requires costly repairs but they have the incentive to conceal information so that they can sell the car at a higher price.
 - Inability to discriminate between quality types by less informed party:
 - However, buyers are unable to accurately determine the true quality of each car before purchasing it because average buyers lack the technical, specialized training needed to spot sophisticated cover-ups or internal wear.
- Step 3: Explain the market response
 - Fall in willingness to pay:
 - To avoid overpaying for a defective car, buyers become less willing to pay high prices for all second-hand cars and instead offer only an average price that reflects the expected average quality of cars in the market.
- Step 4: Explain the market outcomes
 - Average price offered falls:
 - Buyers offer only an average price reflecting the expected average quality of cars. This average price is acceptable to sellers of low-quality cars but is too low for sellers of high-quality cars, who know their cars are worth more
 - Quantity traded falls
 - As sellers of high-quality cars withdraw from the market, the total number of transactions shrinks.
 - Quality falls:
 - As more high-quality cars leave the market, the average quality of cars remaining for sale deteriorates further. Buyers recognise that the probability of purchasing a defective car has increased and reduce their willingness to pay even more. This further discourages sellers of high-quality cars from participating in the market, reinforcing the adverse selection problem. Eventually, the market becomes increasingly dominated by low-quality cars, while a missing market develops for good-quality second-hand cars.

Requirement #2: Asymmetric information leads to Moral Hazard

- Step 1: Definition of moral hazard:
 - Moral hazard is a form of market failure arising from hidden actions after a transaction has taken place, where one party changes their behaviour because the consequences of their actions are partially or fully borne by another party.
- Step 2: Explain the causal mechanism from asymmetric information to moral hazard.
 - In the health insurance market, after purchasing health insurance, insured individuals know more about the level of care they take to maintain their health and their utilisation of healthcare services than insurance companies.
 - Insurers are, however, unable to perfectly observe or monitor every policyholder's behaviour after the insurance contract has been signed.
 - As policyholders know that a significant proportion of their medical expenses will be paid by the insurance company, and that they bear only part, or sometimes none, of the costs, they may become less careful about maintaining a healthy lifestyle by exercising less, consuming unhealthy food or attending health screenings less regularly.
- Step 3: Explain the market response
 - As more policyholders engage in such behaviour, insurance companies experience higher claims and rising payouts (higher insurers' costs).
 - To remain financially viable, insurers increase insurance premiums to all policyholders.
- Step 4: Explain the market outcomes (impact on P and Q and risk types)
 - Price (P): Increases because insurers must raise insurance premiums to offset the higher payout costs caused by overused medical services.
 - Quantity (Q): The higher premiums discourage some low-risk individuals from purchasing or renewing health insurance, resulting in under-consumption of health insurance and reducing access to financial protection against medical expenses.

Part (a) Mark Scheme (10 marks)

Level	Marks	Descriptor
L3	8–10	• Well-developed explanation of how asymmetric information leads to both adverse selection and moral hazard. • Asymmetric info → Adverse Selection/Moral Hazard → Market response → Market outcomes • Relevant examples used for both.
L2	5–7	• Developed but incomplete explanation. • Explains adverse selection and/or moral hazard but have causal missing links. • Some use of examples.
L1	1–4	• Limited understanding. • Provides definitions or examples of asymmetric information, adverse selection or moral hazard but explanation is undeveloped with weak links to market outcomes.

b) Discuss whether it is necessary for governments to intervene in markets with asymmetric information. [15]

Introduction:

Government intervention may be necessary when asymmetric information left unchecked leads to market failure which is the loss of society's welfare. Measures will thus need to be implemented to reduce asymmetric information in the case of adverse selection and moral hazard.

Requirement #1: Discuss whether it is necessary for governments to intervene in markets with adverse selection**Thesis: Government intervention may be necessary****Step 1: Explain why adverse selection causes market failure (brief)**

- From part (a), adverse selection leads to the market becoming increasingly dominated by low-quality products and some mutually beneficial transactions involving high-quality products fail to occur.
- Resources are allocated inefficiently where transactions halt or only low-quality goods are traded, failing to maximize societal welfare.
- Society does benefit from the presence of high quality goods (willing buyer and sellers) but due to adverse selection, these transactions do not occur and society is worse off for that.

Step 2: Explain how government intervention can address the problem

- One reason government intervention may be necessary is that it can reduce the information asymmetry that gives rise to adverse selection. For example, the government may introduce legislation requiring second-hand car dealers to disclose important information such as accident history, mileage records, previous ownership and major mechanical defects. The government may also require independent inspections and certification before a car can be sold.
- As buyers now have access to more reliable and standardised information, they are better able to distinguish between high-quality and low-quality cars before making a purchase. Consequently, buyers become more willing to pay prices that reflect the true quality of individual cars rather than offering only an average price for all cars. Sellers of high-quality cars are therefore more willing to remain in the market as they can receive prices that reflect the true value of their cars.
- As more good-quality cars remain available for sale, adverse selection is reduced and mutually beneficial transactions involving good-quality cars are restored. Consequently, the quantity of good-quality second-hand cars traded increases closer to the allocatively efficient level, allowing mutually beneficial trades between willing buyers and sellers to occur, thereby improving allocative efficiency and societal welfare.

Anti-Thesis: Government intervention may not be necessary

- However, government intervention may not always be necessary because private-sector solutions can also reduce information asymmetry. For example, reputable dealers may voluntarily provide warranties, service records, certified pre-owned programmes or independent vehicle inspection reports to signal the quality of their cars. Buyers may also engage independent mechanics to inspect vehicles before purchase or rely on dealer reputation and consumer reviews. These market-based mechanisms reduce information asymmetry without direct government intervention.

Evaluation (1 well-explained judgement based on T & AT in given context can secure full credit)

- The necessity of intervention depends on whether private market solutions can effectively overcome information problems. Where reputation mechanisms, warranties and independent certification are credible and widely adopted, firms may be able to reduce adverse selection sufficiently without government intervention. However, where consumers still find it difficult to verify product quality or where reviews can be manipulated, private solutions may be insufficient and government intervention becomes more necessary.

Requirement 2: Government intervention to address moral hazard

Thesis: Government intervention may be necessary

Step 1: Why moral hazard causes market failure (brief)

- As explained in part a, moral hazard leads to insurers increasing insurance premiums charged to all policyholders. Higher premiums discourage some individuals, particularly healthier or lower-risk consumers, from purchasing or renewing insurance. Consequently, insurance coverage falls while healthcare resources are over-utilised by some insured individuals. Market failure therefore arises because resources are not allocated efficiently, resulting in allocative inefficiency and lower societal welfare.

Step 2: How government intervention can address the problem

- One reason government intervention may be necessary is that it can reduce the incentive for policyholders to engage in moral hazard.

- E.g. the government may require all health insurance plans to include a co-payment or deductible, whereby policyholders must bear part of the medical expenses whenever they seek treatment.
- As policyholders now have to pay part of the medical bill themselves, they internalise a greater proportion of the cost of consuming healthcare.
- Consequently, they have a stronger incentive to carefully consider whether additional consultations, diagnostic tests or treatments are genuinely necessary. They are also encouraged to take better care of their health to reduce the likelihood of requiring expensive medical treatment.
- As excessive healthcare utilisation and risky behaviour decline, insurance companies experience fewer unnecessary claims and lower payouts.
- This reduces the upward pressure on insurance premiums, making health insurance more affordable and encouraging more individuals to remain insured. Consequently, the quantity of health insurance purchased increases closer to the allocatively efficient level, reducing the under-consumption of health insurance.
- At the same time, healthcare resources are allocated more efficiently because unnecessary consumption falls while insurance coverage is maintained.
- Consequently, moral hazard is reduced, allocative efficiency improves and societal welfare increases.

Anti-Thesis: Government intervention may not be necessary

- However, government intervention may not always be necessary because insurers themselves possess various mechanisms to discourage moral hazard.
- Insurance companies may impose deductibles, co-payments, claim limits, exclusions, pre-authorisation requirements or no-claim discounts.
- These contractual arrangements require policyholders to bear part of the financial consequences of their actions, thereby reducing the incentive to consume excessive healthcare.
- Insurers may also monitor claims more closely and investigate unusually high utilisation rates.

Evaluation (1 well-explained judgement based on T & AT in given context can secure full credit)

- Nevertheless, private-sector solutions may not always be sufficient. Competitive pressures may discourage insurers from imposing excessively high deductibles or strict claim conditions because consumers may switch to competing insurers offering more generous coverage. Furthermore, individual insurers may adopt different standards, resulting in inconsistent levels of protection against moral hazard across the market. Government regulation establishes minimum standards that apply uniformly to all insurers, ensuring that incentives to reduce moral hazard exist throughout the health insurance market while protecting consumers from unfair contractual practices. Therefore, while private insurers can reduce moral hazard through contractual arrangements, government intervention remains generally necessary to establish minimum standards that discourage excessive healthcare utilisation across the market.

Concluding Evaluation (1 well-explained judgement based on R1 & R2 in given context can secure full credit)

- Overall, the necessity of government intervention depends less on whether the market suffers from adverse selection or moral hazard, and more on the severity of the resulting market failure. For example, because healthcare is an essential service, the Singapore government regulates health insurance through schemes such as MediShield Life to ensure broad coverage and reduce the welfare losses associated with adverse selection. At the same time, co-payments and deductibles are retained to discourage moral hazard and excessive healthcare consumption. Hence, government intervention is most necessary where the social costs of asymmetric information are greatest and private-sector mechanisms alone are insufficient.

Part (b) Content Mark Scheme (10 marks)

Level	Mark	Descriptor
L3	8–10	• Well-developed discussion of whether government intervention is necessary. • Explains how intervention addresses adverse selection and/or moral hazard

Level	Mark	Descriptor
		And provides a valid AT explaining why intervention may not be necessary due to effective private sector solutions (e.g. screening, signalling, deductibles, co-payment).
L2	5–7	- Developed but one-sided or limited discussion. - Explains why government intervention is necessary but AT is missing or limited. - If AT only discusses limitations of government intervention without showing how private solutions reduce the need for intervention, response remains L2.
L1	1–4	- Limited knowledge. - Basic explanation of asymmetric information or intervention but with incomplete links to necessity of government intervention.

Part (b) Evaluation Mark Scheme (5 marks)

EV	Mark	Descriptor
EV3	5	Well-reasoned judgement weighing thesis against valid anti-thesis. Uses appropriate criteria to determine whether government intervention is necessary, such as the severity of the market failure or the extent to which private-sector mechanisms can address the information problem. - Marking according to requirements: - EV for both R1 and R2 based on T & AT in given context PLUS concluding EV based on R1 and R2 in given context, max 5
EV2	3–4	Some supported judgement considering both sides, but weighing is less developed. Some reference to factors affecting necessity. - Marking according to requirements: - EV for both R1 and R2 based on T & AT in given context but no concluding EV, max 4
EV1	1–2	Simple judgement or limited evaluation. May only discuss limitations of government intervention or make a general stand with limited weighing. - Marking according to requirements: - Only EV for 1R based on T & AT in given context, max 2 - EV for both Rs based on T & AT but not contextualized → too generic, max 2 - Summary for both Rs, max 1

Examiner's comments for part a:

1. To achieve the highest level, students should explain the complete causal mechanism rather than merely stating the definition of adverse selection.

i) Using another example (childcare market), a strong answer should clearly show that:
Adverse selection: Asymmetric information (preschool operators know more than parents about the true quality of childcare services) → Hidden information before enrolment → Parents are unable to distinguish between high-quality and low-quality preschools → Adverse selection occurs → Parents offer only an average fee based on the expected average quality of preschools to avoid overpaying → The average fee is insufficient to cover the higher costs of high-quality preschools → Some high-quality preschools exit the market or reduce supply → The market becomes increasingly dominated by lower-quality preschools, reinforcing adverse selection → Fewer enrolments occur in high-quality preschools and a missing market may develop for high-quality childcare services.

Moral hazard: Parents enrol their child and pay the school fees → Hidden actions after enrolment → Preschool operators know more than parents about the actual quality of care provided each day → Parents cannot continuously monitor classroom practices → Moral hazard occurs → Some preschools reduce effort by increasing teacher-child ratios, hiring less qualified teachers, reducing learning activities or compromising safety standards to cut costs → The quality of childcare provided falls below parents' expectations.

ii) Common mistakes

- Generic explanation using diagram that shows divergence between imperfect information and perfect information.
 - This is too generic and merely illustrates the existence of information asymmetry. It does not explain the specific causal mechanism by which asymmetric information leads to adverse selection (hidden information before the transaction) or moral hazard (hidden actions after the transaction), as required by the question
 - Externality framework.
 - The question requires an explanation of how hidden information or hidden actions affect market outcomes, rather than spillover effects on third parties.
 - Stating that buyers purchase the wrong car
 - This does not explain adverse selection. The key issue is that buyers cannot distinguish quality before purchasing, causing average pricing and the withdrawal of good-quality sellers.
 - Omitting that buyers cannot distinguish between quality types or risk types
 - Omitting the average-price mechanism
 - Many students jump directly from "buyers cannot distinguish quality" to "good cars leave the market". They should explain that buyers offer only an average price because they are uncertain about quality, and this discourages sellers of good-quality cars from remaining in the market.
2. To achieve the highest level, students should clearly explain the hidden action that occurs after the insurance contract has been signed.

i) A strong answer should explain that:

- the insurance contract has already been purchased;
- insurers cannot perfectly observe policyholders' behaviour after the transaction;
- policyholders bear only part of the medical cost because they are insured;
- this changes their incentives and behaviour;
- claims paid by insurers increase;
- insurance companies raise premiums;
- higher premiums discourage some consumers from purchasing insurance
- quantity transacted in the insurance market falls

ii) Room for improvement

- Confusing moral hazard with adverse selection.
 - Many students explain that insurers cannot distinguish between high-risk and low-risk individuals before selling insurance. This describes adverse selection, not moral hazard.
 - The key distinction is:
 - Adverse selection = hidden information before the transaction.
 - Moral hazard = hidden actions after the transaction.
- Stopping at "people become less careful."
 - Students must continue the causal chain:
 - Reduced personal responsibility → More claims → Higher insurer payouts → Higher premiums → Fall in quantity transacted in the insurance market

Examiner's comments for part b:

i) A strong answer should explain the complete causal chain:

E.g. Government legislation requiring compulsory purchase of health insurance (e.g. MediShield Life) → Both low-risk and high-risk individuals are required to participate in the insurance market → A larger and more diversified risk pool is maintained → Insurers spread the cost of claims across more policyholders → Insurance premiums remain affordable and stable → Low-risk individuals continue to remain insured → The market is not dominated by high-risk individuals → Adverse selection is reduced → Allocative efficiency and societal welfare improve.

E.g. Government conducts regular inspections and surprise audits of preschools → Preschool operators know their childcare practices may be monitored → They have less incentive to reduce effort or compromise on teaching quality, staffing or safety after parents have enrolled their children → Moral hazard is reduced → The quality of childcare provided is maintained, benefiting both children and parents.

ii) Room for improvement

- Part (b) builds on the analysis in Part (a). As the sources of market failure are adverse selection and moral hazard, stronger responses proposed policies that directly addressed these problems, rather than discussing measures that merely reduced imperfect information in a generic way.
- Government provides information → Allocative efficiency improves. Missing links: Explain how buyers become able to distinguish quality and why sellers of good-quality cars remain in the market.
- Government intervention → Consumers become more confident → Market failure solved. Missing links: Link back to adverse selection. Confidence alone does not explain why market failure is reduced.
- Discussing affordability instead of adverse selection. For example: "Government subsidises vehicle inspections." This only explains lower costs unless students explicitly explain how the subsidy reduces information asymmetry.
- A common weakness was that candidates discussed the effectiveness or desirability of government intervention rather than its necessity. Since the question asked whether government intervention was necessary, stronger responses considered whether private-sector mechanisms could adequately address the information problem and judged the circumstances under which government intervention would or would not be required. Severity of the problem depends on the market under analysis.
 - Essentials like healthcare, insurance, medicines vs non-essentials: Used furniture, collectibles, second-hand books → Failure in healthcare is more severe.
- Evaluation should build on both the thesis and anti-thesis. Stronger responses synthesise the arguments presented to determine the circumstances under which each is more convincing, rather than introducing new points only in the evaluation.

2 Government expenditure on large-scale infrastructure projects such as airports and mass rapid transit (MRT) can contribute significantly to a country's economic growth.

(a) Explain how government expenditure on large scale infrastructure projects can contribute to a country's economic growth. [10]

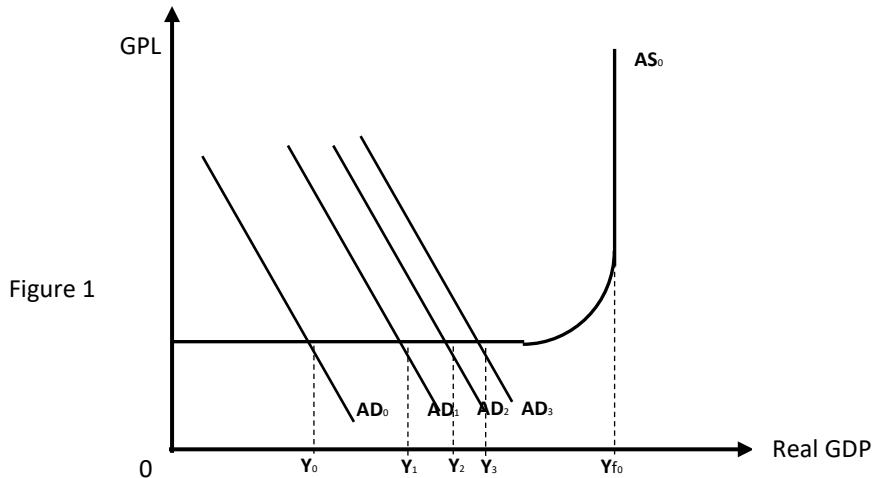
(b) Discuss the extent to which such government expenditure on infrastructure projects will lead to a rise in the living standards of the country. [15]

Part a

- Define sustained economic growth: actual and potential growth

Requirement 1: On AD and Actual Growth

- Increase in government expenditure (G) is a direct injection into the circular flow of income.
- It leads to an increase in AD, since G is an **autonomous component** of aggregate demand (AD)
 - AD refers to the total demand for domestically produced goods and services in a given time period and is the summation of C, I, G and X-M.

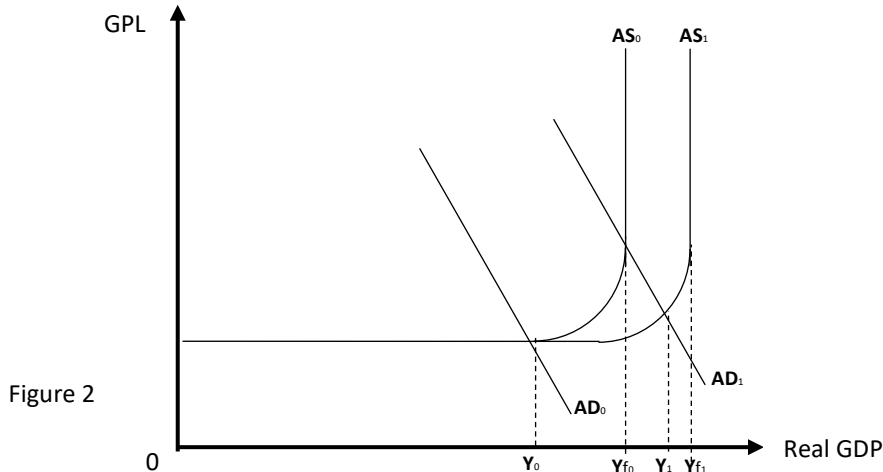


- The increase in autonomous G triggers the **multiplier process** which works on the principle that one man's spending creates income for the next person, and that income in turn leads to more spending.
- Assume the economy is operating at the horizontal range of the AS curve i.e. at less than full employment.
- With existing spare capacity, a rise in G leads to an increase in AD , and the AD curve shifts from AD_0 to AD_1 . This causes an unplanned shortage with a fall in inventories. The construction firms that are awarded the contract to build the MRT or airport will increase production in the next time period by employing more factors of production. As production increases, there is a corresponding increase in income payments to factor owners - resulting in an increase in real national income from Y_0 to Y_1 .
- With the increase in income, households spend a portion of the increase in income on domestically produced goods and services. This is known as **induced consumption**. The other part of the income is either saved, goes to taxes or import expenditure. These leak out from the circular flow of income.
- The induced consumption causes another round of increase in AD . The process goes through many rounds of induced spending to create more income and indirect jobs.
- Each round of increase in AD becomes smaller due to the leakages. The process does not continue indefinitely and ends when the initial increase in G has totally leaked out as withdrawals.
- at the new equilibrium where $AD_3 = AS$, real national income would have risen by **more than proportionate** from Y_0 to Y_3 .

Requirement 2: On AS and Potential Growth

- Government expenditure on MRT and airports improves the quality and quantity of such infrastructure – with a better and extended domestic rail system and airports
- It facilitates movement of final goods as well as factors of production across different parts of the country and even across countries
- Firms can transport inputs and outputs more efficiently – with less delay in delivery times - allowing productivity to increase. A greater level of output can be produced with the same amount of resources
- Moreover, the reduction in travelling time may lead to more productive workers who are less lethargic and can possibly work longer hours
- Better and larger airports also allow for faster transport of a larger volume of imported inputs
- The logistical and distribution efficiency that arises as a result leads to both a fall in production cost and a rise in productive capacity. The latter increases the ability of the economy to produce more goods and services – thereby increasing the full employment possibilities of an economy

- This causes the aggregate supply (AS) curve to shift rightwards from AS_0 to AS_1 . The rise in the full employment frontier from Y_{f0} to Y_{f1} represents potential growth
- In addition, a lower GPL leads to more spending by households (consumption) and foreigners (exports), seen as a movement along the AD curve. This leads to a future realised growth of Y_1 , which was previously unattainable.



Knowledge, Application, Understanding, Analysis		
L3	• A well-developed answer that demonstrates: • Rigorous analysis for BOTH requirements • Good scope of coverage • Good application of contextual examples	8- 10
L2	• Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations • Some application of context and use of examples • Lacking in full scope of analysis	5- 7
L1	• Lack application of relevant economic framework and context • Critical errors in analysis • Significant conceptual gaps in explanation	1 - 4

Areas for Improvement

- Generally, effects on AD and actual growth were relatively well-attempted with some understanding of the multiplier process. However, in some answers, even details on the process itself were lacking. Some such details included the principle of the process as well as the composition of the leakages.
- There were numerous scripts that analysed indirect effects of a rise in C, I and FDI and X instead of focusing on the effects of a rise in G.
- Effects on AS and potential growth were not as well-attempted. Quite often, answers could not analyse the direct effects of infrastructure on factor mobility such as faster transport time. Many answers instead chose to discuss indirect and sometimes irrelevant impact on I and FDI.
- There were answers that focused too much on explaining the effects on a rise in AS on (future) actual growth and made a cursory mention of potential growth. Details on what is meant by productive capacity and rise in full employment level were often ignored. And diagrams also failed to show the change in full employment level as productive capacity rises.
- A few answers offered a T/AT approach for a 'part a' lower-order question – which is a waste of precious time

(b) Discuss the extent to which such government expenditure on infrastructure projects will lead to a rise in the living standards of the country. [15]

Introduction

- Standard of living refers to material and non-material welfare of each citizen in the country
- Material welfare refers to an average individual's ability to consume goods and services. On the other hand, non-material aspects include intangibles such as access to education (literacy rates), healthcare facilities (life expectancy) and stress levels

Development

Requirement 1: On material living standards

Thesis: Material welfare may rise

- Increase in G on infrastructure projects contributes to a rise in real national income, as explained in part a
- **Key indicator: real GDP per capita** is a key indicator of material SOL as it measures the average income available per person
- $$\text{Real GDP per capita} = \frac{\text{Real GDP}}{\text{Population}}$$
- The population size is less likely to change significantly over the period unless there are relaxed immigration rules. Thus, the increase in real national income is likely to outstrip the increase in population size, causing real GDP per capita to rise. This means that, on average, each individual can consume more goods and services
- Furthermore, real GDP has eliminated the effect of inflation. A measurement in real terms reflects an increase in purchasing power rather than a rise in prices of goods and services
- With a rise in real income, more wants and needs such as better housing and more nutritious food can be met. In this regard, the rise in real GDP per capita is likely to have led to an improvement in material welfare
- **On Potential Growth and material welfare:** Over the long run, as AS rises, the potential growth that ensues leads to a sustained rise in real GDP – as seen by real GDP rising to Y1 in Figure 2. This means that the material welfare continues to rise. And the added benefit of a rise in AS is that it moderates the rate of inflation, ensuring that the cost of living does not rise too drastically.

Anti-thesis: Material welfare may fall/may not rise [any 1 idea well-elaborated]

Issue 1: On Income Inequality (measured by Gini coefficient)

- The resultant rise in real national income may not be equitably distributed. And such G on infrastructure is unlikely to reduce the high income disparity such as in the case of Singapore with a high Gini coefficient value of 0.45 in 2019
- **Apply to context:** In this case, architects and engineers are more likely to benefit with a greater rise in income as compared to construction workers. This is because the former has a relatively price-(wage)-inelastic supply compared to the latter with a relatively price-elastic supply. This arises from a difference in skill levels. With a rise in demand, the highly-skilled sector is likely to have a higher wage increase compared to the lower-skilled sector

Issue 2: Impact of rising cost of living on the lower-income group

- As AD rises, the shortage of resources may cause demand-pull inflation as firms raise prices to maintain their profitability. This occurs at the upward sloping portion of the AS curve.
- undoubtedly real GDP still rises – but the benefits to different income groups vary significantly. For the lower-income group, their nominal wages may not have risen in tandem with the inflation rate. As a result, their real income may have fallen.
- Therefore, economic growth may not benefit these workers whose wages may have been suppressed due to their abundant supply, coupled with lack of skills. The higher inflation increases cost of living for this group, reducing their access to goods and services. This worsens inequity in distribution

Evaluation R1: (any 1 idea with substantiation)

- Size of multiplier: The extent of rise in material standard of living depends on the size of the multiplier. It bears an inverse relationship with the marginal propensity to withdraw. Countries with a huge MPM due to lack of natural resources and countries with huge MPT due to a more progressive income tax are likely to have a small k. A rise in G may not increase real national income significantly to bring about the desired rise in material welfare.
- Crowding out effect: If a government lacks funds to finance its spending, the extent of rise in material welfare may be reduced. Government borrowing from the private sector raises interest rates and thus reduces C and I with higher borrowing costs. This fall may reduce to some extent the rise in AD due to government spending.
- To some extent, the income gap may be reduced even when there is a disparity in skills. This is because the multiplier process creates many indirect jobs through many rounds of income creation and job creation. As a result, the income of those employed by the construction firms that win the contract can filter down to lower-skilled workers in restaurants and other retail outlets

Requirement 2: On non-material living standards**Thesis: Non-material welfare may rise**

- Pollution reduced over the long term
 - Expansion of MRT increases availability and convenience of commuting for work and leisure, making it a good substitute for car usage. The demand for car usage may fall, thereby reducing carbon emissions which pollutes the air and reducing road congestion which causes delay in traveling time
 - As rail transport has a higher passenger capacity and lower emission per commuter than private cars, the environmental impact is likely positive over time. Residents will suffer from less respiratory problems due to poor air quality
- Reduced stress level:
 - Singaporeans have overtaken the Japanese and Koreans with an average of 43 working hours per work week. In these developed countries, stress levels are induced by long working hours which correspond with less time for leisure. A long travel journey will somehow add to the stress. A comfortable, smooth and fast MRT ride may somewhat alleviate the stress of a workday – leaving people with more leisure time for recreational pursuits – and this is especially so when amenities are within reach of the MRT

Anti-thesis: Non-material welfare may fall (any one idea well-elaborated)**Issue 1: Pollution**

- The construction of MRT lines and airports requires heavy machinery such as excavators, bulldozers and cranes – many of which are powered by diesel. The burning of these fossil fuels release carbon dioxide, nitrogen oxides and particulate matter, contributing to air pollution. Construction activities may generate significant noise pollution - adversely affecting residents in the vicinity. As construction firms are profit-maximising, they do not take into account the negative externalities generated – which affects the quality of life of residents. They will not bother to erect noise barriers or strive to use green energy unless mandated by the government.
- *Can also use a case study:* Moreover, land clearing such as clearing of Dover Forest to make way for these developments lead to deforestation, biodiversity loss and a reduced capacity for forests to absorb carbon dioxide, thereby worsening environmental degradation. In this case, Singaporeans have less of a place to destress – watch the birds or spot wildlife – and take a break from the daily grind of studies and work
- The deterioration in environmental quality may reduce quality of life, thereby reducing non-material welfare

Issue 2: Less for Other Areas such as education and healthcare

- As governments have limited budgets, more spending on infrastructure will mean less for other areas such as education and healthcare. Spending on infrastructure may not have an immediate direct impact on welfare unlike education and healthcare especially for the under-privileged
- When a government builds schools and hospitals, trains teachers and medical professionals, it will have the effect of increasing school enrolment ratio and increasing citizens' access to healthcare services. Moreover, subsidies in these areas will correct the under-consumption due especially to inability to afford. This improves equity in distribution, which over the long term can increase life expectancy and literacy rates
- The issue is especially more pertinent in LDCs where a large cross-section of the population needs to be equipped with skills. In DCs, healthcare spending becomes a priority with the needs of an ageing population
- The added benefit of such spending is that education and healthcare can lead to a productive and healthier workforce which is important for sustained growth and sustained rise in living standards through its effects on productive capacity and AS

Evaluation R2 (any one idea with substantiation)

- Although MRT construction generates negative externalities in the short run, it may reduce negative externalities in the long run as car usage dips. While MRT construction generates carbon emissions due to the production use of diesel-powered construction machinery, these are largely one-off costs. In the long run, society benefits from reduced carbon emissions from cars and even buses. In this regard, the long-term term benefits outweigh the short term environmental costs
- The extent of opportunity cost depends on the fiscal position of the country. Governments with larger budget surpluses may be able to balance the needs better than countries that run on budget deficits. The ramifications of borrowing to finance and raising taxes may run counter to the objectives of raising living standards.

Conclusion/ Summative Evaluation:

- Make a stand on effects on material and non-material welfare
- On balance, whether living standards rise depends on the country's fiscal position and its ability to enact measures to reduce pollution such as mandating the erection of noise barriers and curfew hours
- All things considered, a government often has other considerations (other than raising growth and material living standards) when deciding to embark on building MRT and airports. A comprehensive MRT network may be intended to draw people away from car usage and an airport to facilitate tourism and international business
- Efforts to raise living standards should include an all-encompassing strategy to bring about growth and then distribute such 'fruits of success' to the masses via transfer payments as well as education and healthcare

Areas for Improvement

- For material living standards, most answers did not discuss the key indicator – real GDP per capita. Any answer on living standards would require this indicator as it is being used and recognised internationally. The few answers that made a mention of the indicator did not explain clearly the link to changes in population size. Neither was it recognised as an average value. Most answers gave largely unsupported statements that material living standards would rise as incomes had risen, but did not fully explain that, for material welfare to rise, it needs to be a rise in real GDP per capita.
- Many answers discussed demand-pull inflation with a flawed analysis that material welfare would fall. The key flaw was that even if the AS curve is at the upward sloping segment, real GDP would still rise – and living standards would still rise despite inflation.

- Most discussions on non-material welfare tended to be **mere assertions without elaboration**. Some classic examples include asserting that 'jobs and income lead to social cohesion and lower crime rates' and 'access to hospitals and schools will increase life expectancy and literacy rates' – without any elaboration at all.
- For non-material welfare, a good approach is to discuss pollution – both as a thesis and anti-thesis. This gives the most rigour in economic analysis. Then explain briefly convenience of travel (though this has very little economic analysis). Both issues link clearly to the context. Such a discussion will definitely be better than mere statements that link to stress levels, social cohesion and crime rates.

Knowledge, Application, Understanding, Analysis		
L3	- A well-developed answer that demonstrates: - Rigorous analysis for BOTH requirements - Good scope of coverage - Good application of contextual examples	8- 10
L2	- Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations - Some application of context and use of examples - Lacking in full scope of analysis	5- 7
L1	- Lack application of relevant economic framework and context - Critical errors in analysis - Significant conceptual gaps in explanation	1 - 4
Evaluation		
E3	- Insightful and perceptive evaluation on the extent to which G spending on infrastructure would raise the SOL - Summative evaluation at the end	5
E2	- Substantiated judgment, supported by sound economic analysis - Answers the question on the extent of impact of G spending on SOL	3-4
E1	- Unsupported judgment - Superficial conclusion/assertion	1-2

3 The exchange rate is a key policy tool in managing the economy of Singapore.

(a) Explain how an appreciation of the exchange rate might affect aggregate demand and aggregate supply in an economy. [10]

(b) Discuss whether management of the exchange rate is the most appropriate way of controlling inflation in Singapore. [15]

Part (a)

Examiners Comments

1. Incorrect focus on hot money inflows or FDI

Many candidates explained that appreciation would attract hot money inflows or foreign direct investment (FDI), increasing investment and aggregate demand. Candidates were expected to explain the **effects** of appreciation, not its **causes** or indirect consequences. The expected analysis should begin with changes in the relative prices of exports and imports, leading to changes in net exports ($X - M$).

2. Incorrect focus on foreign labour inflows

Some candidates argued that appreciation would attract more foreign workers, increasing aggregate supply. This explanation was not credited because there is no direct causal relationship between appreciation and foreign labour inflows. The supply of foreign labour depends primarily on government policies and labour market conditions, rather than changes in the exchange rate.

3. Descriptive rather than analytical explanation

Many candidates stated that exports would fall, imports would rise and aggregate demand would decrease without explaining the transmission mechanism. Candidates should explain how changes in export and import prices affect their quantities demanded, net exports and hence aggregate demand. There was no need to discuss the subsequent effects on inflation, unemployment or economic growth, as the question focused only on aggregate demand and aggregate supply.

4. Incorrect labelling of the hybrid AS curve

Some candidates labelled the horizontal section of the hybrid AS curve as SRAS and the vertical section as LRAS. This is incorrect because the hybrid AS curve is a single curve containing the Keynesian, intermediate and classical ranges. Its sections should therefore not be labelled as separate SRAS and LRAS curves.

Introduction

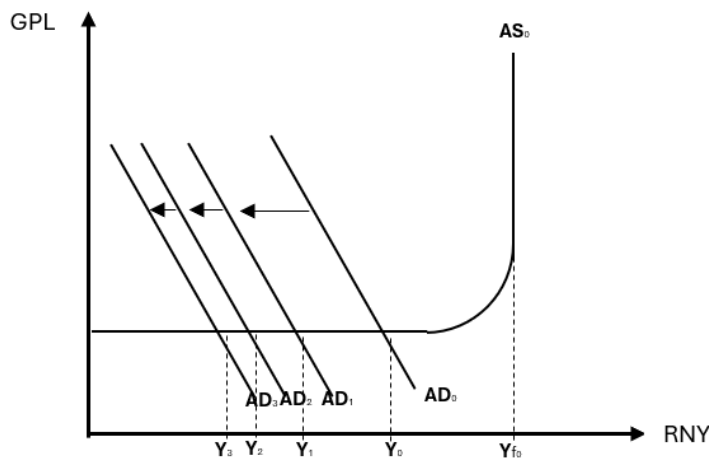
Define key terms:

- Appreciation
- Aggregate demand
- Aggregate supply

Requirement #1: Explain how an appreciation may lead to fall in AD

Explain impact of appreciation on X-M and thus, autonomous AD

- Appreciation increases the price of exports in foreign currency terms. Thus, quantity demanded for exports falls as foreigners switch away and purchase cheaper alternatives. The impact on export revenue (X) depends on the price-elasticity of demand for exports.
- At the same time, an appreciation also reduces the price of imports in domestic currency terms. Thus, quantity demanded for imports increases as local consumers switch away from domestically produced goods and purchase more imports. The impact on import expenditure (M) depends on the price-elasticity of demand for imports.
- Assuming Marshall-Lerner Condition ($|PED_x + PED_m| > 1$) holds, net exports (X-M) falls. Since X-M is a component of AD, a fall in X-M results in a fall in AD from AD_0 to AD_1 .

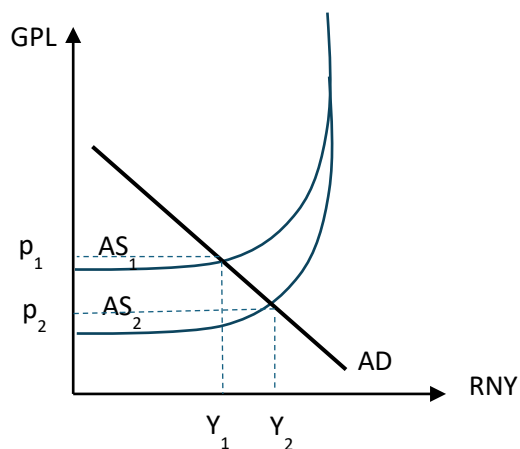


Explain reverse multiplier process leading to significant fall in AD

- The fall in AD leads to a rise in inventories, causing firms to cut back on production and employ less factors of production in the next time period. The initial fall in expenditure thus leads to further falls in AD as the fall in income leads to fall in induced consumption. AD shifts further leftward and eventually to AD_3 . As such, an appreciation of the currency might lead to a significant fall in AD.

Requirement #2: Explain how appreciation leads to increase in AS

- An appreciation of the exchange rate causes the domestic currency to strengthen relative to foreign currencies. Consequently, fewer units of domestic currency are required to purchase the same quantity of imported goods and services.
- As a result, the domestic currency price of imports falls. This includes imported raw materials, intermediate goods and capital equipment used in production, such as crude oil, natural gas, semiconductor wafers, industrial machinery and food ingredients.
- For a highly import-dependent economy such as Singapore, firms experience a reduction in production costs. For example, a stronger Singapore dollar lowers the cost of importing natural gas used to generate electricity, crude oil used by transport and manufacturing firms, semiconductor wafers and precision equipment used by electronics manufacturers, and food ingredients used by food and beverage businesses.
- The fall in the prices of imported inputs reduces firms' unit cost of production (or average cost of production). Since firms are able to produce each unit of output at a lower cost, profitability rises at every price level. Lower production costs increase firms' willingness and ability to supply goods and services. Firms therefore expand output as production becomes more profitable.
- At the macroeconomic level, the reduction in economy-wide production costs leads to an increase in aggregate supply. In the AS framework, this indicates that a larger level of real output can be supplied at the same general price level and is represented by a downward shift of the horizontal segment of the AS curve from AS_1 to AS_2 .

**Mark Scheme:**

Knowledge, Application, Understanding, Analysis		
L3	<i>A well-developed answer that demonstrates:</i> • <i>Rigorous analysis for BOTH requirements</i> • <i>Accurate use of the relevant economic framework</i> • <i>Good scope of coverage</i>	8- 10
L2	• <i>Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations</i> • <i>Lacking in full scope of analysis</i>	5- 7
L1	• <i>Lack application of relevant economic framework</i> • <i>Critical errors in analysis</i> • <i>Significant conceptual gaps in explanation</i>	1 - 4

Part (b)**Examiners' Comments:****1. Inappropriate choice of alternative policy**

Some students proposed interest-rate policy as the alternative to exchange-rate management without recognising Singapore's monetary-policy framework. Students must take note that policy choice must be appropriate to both the cause of inflation and Singapore's institutional context.

2. Excessive explanation of how MAS appreciates the SGD

Some students explained extensively how MAS changes the slope, width or centre of the S\$NEER policy band. This was not the main focus of the question. A brief contextual statement is sufficient.

3. Missing GPL adjustment process

Many students identified the relevant shift in AD or AS but did not explain how the economy adjusts to a new equilibrium GPL. Since the question concerns inflation management, the GPL adjustment process is critical.

4. Superficial explanation of supply-side policies

Many students stated that training, R&D or automation would "raise labour productivity, lower costs and increase productive capacity" without explaining how or why. These were asserted outcomes rather than rigorous economic analysis.

5. Conceptual error concerning corporate tax and AS

Some students argued that a reduction in corporate income tax directly lowers firms' unit costs of production and therefore shifts AS rightwards. Corporate income tax is levied on profits, rather than on each unit produced, so a reduction does not necessarily cause an immediate fall in marginal or average production costs.

6. Weak link to effectiveness and desirability

Many students identified a policy limitation—for example, slower growth, unemployment or government expenditure—but did not explain why it made the policy less appropriate.

A conflict between policy objectives is not, by itself, a completed argument.

7. Insufficient comparison between the policies

To answer "most appropriate", students must eventually compare exchange-rate management and the alternative policy using common yardsticks. Separate evaluations of each policy are not sufficient. The use of comparative language is necessary, and the conclusion must rank the policies rather than merely state that both are useful.

Dissect the question**Guiding questions**

1. What is the outcome the government is trying to achieve?
2. What does "most appropriate" require me to do?
3. What alternative policy will provide the strongest comparison?
4. What characteristics of Singapore will affect which policy is more appropriate?
5. What criteria can I use to compare the two policies?

Introduction

- Define inflation: persistent increases in the general price level of a country
- State the types of inflation experienced by Singapore: both cost-push and demand-pull inflation.

Requirement #1: Discuss appropriateness of exchange-rate centred monetary policy in addressing inflation in Singapore**Thesis: Exchange rate policy can be used to manage both types of inflation.**

The Monetary Authority of Singapore (MAS) conducts monetary policy by managing the Singapore dollar nominal effective exchange rate (S\$NEER) against a trade-weighted basket of currencies within a policy

band. To tighten monetary policy, MAS can allow the S\$NEER to appreciate more rapidly or re-centre the policy band upwards.

Explain how appreciation of the SGD can help to reduce demand-pull inflation

Summary of the impact of appreciation on AD (details have been done in part a):

- An appreciation of the Singapore dollar (SGD) means that one unit of SGD can purchase more foreign currency. Consequently, Singapore's exports become relatively more expensive to overseas consumers while imports become relatively cheaper for domestic consumers. This is likely to reduce the quantity demanded of exports and increase the quantity demanded of imports. Assuming the Marshall-Lerner condition holds, autonomous net export expenditure ($X - M$) falls.
- Since net exports are a component of aggregate demand (AD), a fall in autonomous net export expenditure causes AD to decrease, represented by a leftward shift of the AD curve from AD_1 to AD_2 .

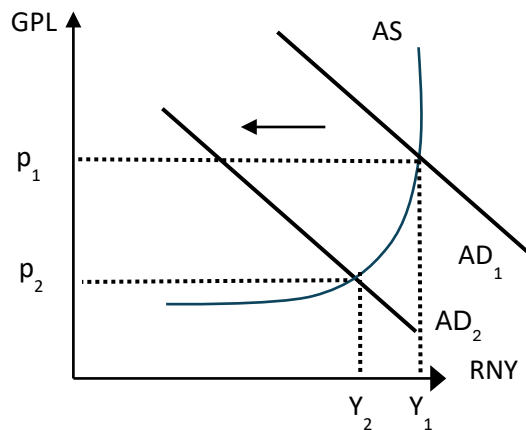
Application to Singapore:

- Singapore is a highly open economy, with exports accounting for a significant proportion of aggregate demand (currently about 180%). A reduction in export demand arising from an appreciation of the SGD can lead to a substantial fall in AD.

Explanation of GPL adjustment with fall in AD:

When aggregate demand falls, excess demand in the economy is reduced and firms face less pressure to compete for scarce resources and are less able to raise prices.

- Consequently, demand-pull inflationary pressures are alleviated, resulting in a fall in the general price level from P_1 to P_2 (or a reduction in the rate of inflation).

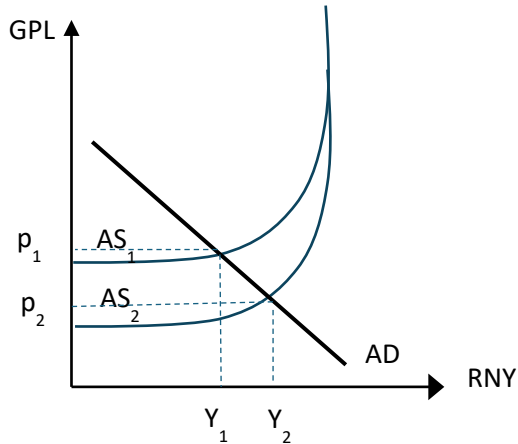


Explain how appreciation of the SGD can help to mitigate cost-push inflation

- As a small country with lack of natural resources, Singapore is highly reliant on imports for food and raw materials. Thus, the Singapore economy is highly susceptible to fluctuations in prices of global commodities e.g. crude oil.
- An appreciation of the SGD will cause prices of imported factor inputs in SGD to fall, which decreases unit cost of production. This leads to a rise in AS, as represented by a downward shift of the horizontal segment of AS from AS_1 to AS_2 – thus mitigating cost push inflation in Singapore

Explanation of the GPL adjustment with rise in AS:

- With a rise in AS, there is excess supply at the initial GPL, P_1 . Firms accumulate unintended inventories and respond by lowering prices to stimulate quantity demanded while increasing production. As the GPL falls, the wealth, interest-rate and international-substitution effects cause a downward movement along the AD curve, increasing the quantity of real national output demanded.
- This adjustment continues until aggregate demand equals aggregate supply at the new equilibrium, resulting in a lower GPL at P_2 .



Anti-thesis: May not be appropriate for Singapore - Undesirable Outcome

Assuming Marshall-Lerner condition holds, an appreciation will cause fall in net exports and the resulting fall in AD may reduce firms' revenue, profits and production.

- Export-oriented firms may respond by reducing investment and employment, causing actual economic growth to slow and demand-deficient unemployment to rise. The effect of the fall in AD (due to fall in X-M) is likely to outweigh the rise in AS, causing RNY to fall.
- This could worsen SOL as real GDP per capita falls and loss of income for workers especially those in the export sector (significant for Singapore).

Evaluation Requirement #1 (Just 1 insightful point)

Guiding Questions:

1. What are the benefits and costs I am weighing?
2. What does their relative importance depend on?
3. What feature of Singapore helps me decide?
4. Which side is stronger in Singapore, and why?
5. Therefore, when is the policy appropriate or inappropriate?

Effectiveness depends on the source of inflation

- As Singapore imports much of its food, energy and raw materials, much of its inflation may be imported in nature. Hence, an appreciation of the SGD is particularly effective in mitigating imported cost-push inflation.
 - a. **When inflation is mainly imported, this anti-inflation benefit is likely to outweigh the possible loss of export competitiveness and growth.**
- However, if inflation is mainly driven by domestic factors such as wage growth exceeding productivity growth, rising rents or strong domestic demand, exchange-rate policy may be less effective.
 - a. **In this case, the cost to export growth may be relatively greater than its anti-inflation benefit because appreciation does not directly address the source of inflation.**
- Therefore, **exchange-rate management is most appropriate when Singapore's inflation is substantially imported**, but complementary fiscal or supply-side policies are required when inflation is domestically generated.

What the bolded sections show:

Weighing in favour of the policy: benefit outweighs cost.

Weighing against the policy: cost may be greater than benefit under a different condition.

Stand: when the policy is most appropriate.

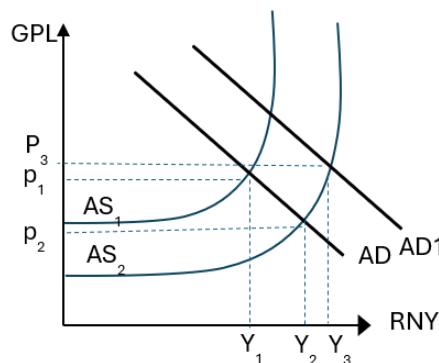
Requirement 2: Discuss appropriateness of alternative policies in addressing inflation in Singapore

Thesis Supply-side policies can be used to manage cost-push inflation.

- The Singapore government can provide subsidies and grants to encourage firms to adopt productivity-enhancing technology, undertake process innovation and train their workers. For example, government support for automation, digitalisation, research and development, and workforce upgrading reduces the private cost to firms of investing in technology and skills.
- Such policies are relevant to Singapore because the economy faces high labour and land costs, limited natural resources and an ageing workforce. Singapore must therefore rely on productivity growth rather than low wages to maintain cost competitiveness.
- As firms adopt more advanced machinery and improve workers' skills, labour productivity increase as **firms can produce the same quantity of output using fewer inputs or produce more output using the same quantity of inputs. Unit labour and production costs consequently fall.**
- Firms become willing and able to supply more goods and services at each GPL, causing horizontal segment of AS to shift downwards to AS₂, **reducing cost-push inflation.**
- Over time, firms' investment in advanced machinery, automation and process innovation increases the quantity and quality of Singapore's capital stock. At the same time, education and training improve workers' skills and occupational mobility, raising the quality and productivity of labour. **Each unit of labour and capital can therefore produce more output. This increases the economy's maximum productive capacity or full-employment level of real national output.**
- Hence, the vertical segment of the AS curve shifts rightwards to AS₂.

Explain GPL adjustment:

- As AS increases, excess supply emerges at the initial price level, leading firms to reduce output prices to clear inventories. As the GPL falls, the quantity of real national output demanded increases through the wealth, interest-rate and international-substitution effects. The economy reaches a new equilibrium with a lower GPL.



- In addition, this policy is also desirable as the economy can accommodate a larger increase in AD before reaching its capacity constraint, reducing the likelihood of demand-pull inflation while enabling higher potential economic growth. From above diagram, when AD rises to AD₂, the economy can increase RNY from Y₂ to Y₃ without reaching its new capacity constraint.
- The rise in AD therefore results in a larger increase in RNY and a smaller increase in the GPL than would have occurred if the vertical segment had remained at AS₁.
- Hence, demand-pull inflation is reduced while higher potential economic growth is achieved.

Anti-thesis: Supply-side policies may not less appropriate (Any 1 with elaboration with reference to Singapore)

Limited short-run effectiveness

- Supply-side policies may be less appropriate for controlling inflation in the short run because they operate with long and uncertain time lags. Firms require time to purchase and install machinery, train workers and reorganise their production processes. There is also no guarantee that subsidised investments will produce substantial productivity gains.

- In the short run, productivity and unit costs may therefore remain largely unchanged, resulting in little or no change in AS. The GPL consequently remains at P1, and existing cost-push inflation is not significantly reduced.

Application to Singapore:

- This is particularly significant for Singapore when inflation results from a sudden rise in global food, energy or raw-material prices.
- Productivity improvements cannot immediately prevent these external price increases from being transmitted to Singapore's import and production costs.
- Hence, **supply-side policies may be ineffective in controlling Singapore's imported inflation promptly.**

OR

Reduced desirability due to structural unemployment

- Productivity-enhancing supply-side policies may be less desirable because the adoption of automation and digital technology can displace workers performing routine tasks. For example, in Singapore, the increasing use of self-service systems, automated production processes and digital administrative tools may reduce the demand for cashiers, routine production workers and clerical employees. If displaced workers, particularly older and lower-skilled workers, do not possess the digital and technical skills required in expanding sectors such as advanced manufacturing and information technology, they may be occupationally immobile.
- The resulting mismatch between the skills possessed by unemployed workers and those required by employers increases structural unemployment. Affected workers suffer a loss of income and material standard of living.
- Hence, **productivity-enhancing supply-side policies may be less desirable if lower inflation is achieved at the cost of greater structural unemployment and income insecurity in Singapore.**

Evaluation Requirement #2

- **Long-run benefits of supply-side policies are likely to outweigh their costs in Singapore.** Higher productivity lowers unit costs and increases productive capacity, allowing inflation to fall while output rises. Singapore's retraining and job-matching support may also **reduce the extent of structural unemployment.**
- However, **the long implementation lag limits their effectiveness against a sudden rise in imported food, energy or raw-material prices.** Therefore, **supply-side policies are more appropriate for addressing persistent domestic cost pressures than immediate imported inflation in Singapore.**

Weighing: benefits likely to outweigh the possible unemployment costs.

Qualifying above with example.

Stand: condition where it is more appropriate

Concluding Evaluation (Evaluation 3)

For comparison questions: 2 comparisons should be dedicated towards comparing Requirement 1 and 2 using common yard sticks with application to country in context of question

- *concluding statement to answer question*

1. Relative effectiveness in addressing Singapore's inflation structure

Exchange-rate policy has **broader** short-run effectiveness because an appreciation lowers imported consumer and input prices, reducing imported cost-push inflation, while the resulting fall in net exports can also ease demand-pull inflation through lower AD. **In contrast**, supply-side policies mainly address persistent domestic cost pressures by raising productivity and increasing AS, but they do not quickly reduce excessive AD. Given Singapore's high import dependence, exchange-rate policy is generally **better suited** to immediate inflationary pressures, although supply-side policies may be **more effective** when inflation stems from persistent domestic wage and productivity problems.

2. Speed of impact vs structural impact

Exchange-rate policy acts relatively quickly by lowering the SGD prices of imported goods and production inputs, although its effects through trade flows may take longer.

Note the difference between Evaluation 1/2 vs Evaluation 3:

Evaluation: When is each individual policy appropriate?

Evaluation 3: Which policy performs better under the same yardstick?

Use of comparative language is necessary to make the difference clear.

Supply-side measures such as training, R&D and capital upgrading **require more time** to raise productivity and reduce unit costs. Hence, exchange-rate policy is **more appropriate** when inflation must be controlled promptly, while supply-side policies are **better suited** to addressing longer-term structural cost pressures.

Concluding statement (to answer the question)

Overall, exchange-rate management is Singapore's most appropriate primary short-run anti-inflation policy because it acts relatively quickly and addresses both imported cost-push and demand-pull inflation. Supply-side policies should complement it by reducing persistent domestic cost pressures and expanding productive capacity over the longer term. Thus, exchange-rate policy should remain the main tool for short-run price stability, supported by supply-side measures for sustained price stability.

Mark Scheme:

Knowledge, Application, Understanding, Analysis		
L3	A well-developed answer that demonstrates: • Rigorous analysis for BOTH requirements (Exchange Rate Policy and at least one other policy) • Good scope of coverage (addresses both demand-pull and cost-push inflation) • Good application to context (contextualised to Singapore economy)	8- 10
L2	• Some economic analysis for both requirements (R1 and R2) but with gaps or lapses in explanations • Some application of context and use of examples • Lacking in full scope of analysis	5- 7
L1	• Lack application of relevant economic framework and context • Critical errors in analysis • Significant conceptual gaps in explanation	1 - 4
Evaluation		
E3	• Insightful and perceptive evaluation on the appropriateness of policies to address inflation in Singapore • Summative evaluation at the end	5
E2	• Substantiated judgment, supported by sound economic analysis • Answers the question on the appropriateness of policies in addressing inflation in Singapore.	3-4
E1	• Unsupported judgment • Superficial conclusion/assertion	1-2