Suggested answer for 2022 A-Level Paper 2 Question 2

The Singapore government announced in Budget 2018 that the goods and service tax (GST) would rise from 7% to 9% sometime between 2021 and 2025. The intended consequence of this change is to raise tax revenue. However, following the coronavirus (Covid-19) outbreak in 2020, the incomes of many households fell.

- a) With the aid of diagrams, explain why an increase in GST and a fall in incomes of many households are **each** expected to cause a fall in expenditure on luxury goods. [10]
- b) Discuss whether this increase in GST is likely to raise tax revenue and whether it will lead to unintended consequences. [15]

Approach	Command Word	Explain why
	Question Type	Cause and effect
	Start point	 An increase in GST A fall in incomes of many households
	End Point	Fall in expenditure
Content and Context	Content	 Price mechanism Price elasticity of demand (PED) Income elasticity of demand (YED) Consumer expenditure (TE)
	Context	Luxury goods, Singapore

Part (a) - Question Analysis

Introduction

State essay approach: An increase in GST is expected to cause a fall in expenditure on luxury good through a decrease in supply and a price inelastic demand while a fall in incomes of many households is expected to cause a fall in expenditure on luxury good through a more than proportionate decrease in demand as demand is income elastic.

Body Point 1: An increase in GST is expected to cause a fall in expenditure on luxury good

- GST is an **indirect tax**, which is initially borne by the producers. A tax imposed on a good will **raise the unit cost of production**, leading to a **decrease in supply**.
- GST is also an ad-valorem tax, which is a tax imposed as a fixed percentage of the price of the good. Since the tax is fixed in percentage terms, the amount of tax (\$) per unit of output increases as price increases, resulting in a leftward pivotal shift of the supply curve from SS₀ to SS₁ as the vertical distance between SS₀ and SS₁ is the amount of tax.
- As supply curve shift leftward, there is a shortage at the initial equilibrium price, causing upward pressure on price, until the shortage is eliminated where quantity demanded equals quantity supplied again. Hence the increase in GST will result in an increase in equilibrium price from P₀ to P₁ and a fall in equilibrium quantity from Q₀ to Q₁.
- **Demand for luxury good is also price elastic.** Price elasticity of demand (PED) refers to the degree of responsiveness of quantity demanded of a good to a change in the price of the good itself, ceteris paribus. Since household can give up luxury goods easily, they will be more price sensitive to a change in price of luxury good such as a car or designer bag or clothes.



- Expenditure is given by price multiply by quantity.
- Since PED for luxury goods is more than 1, the increase in price will lead to a more than proportionate decrease in quantity demanded. The increase in expenditure due to the increase in price (area P1E1AP0) is less than the fall in expenditure due to the decrease in quantity demanded (area AE0Q0Q1). Therefore, an increase in GST is each expected to cause a fall expenditure on luxury goods.

Body Point 2: A fall in household income is expected to cause a fall in expenditure on luxury good

- A fall in income for many households would result in a fall in real disposable income, ceteris paribus. This would lead to a fall in purchasing power and households would have less ability to consume goods and services.
- The demand for luxury good is also income elastic. Income elasticity of demand (YED) refers to the degree of responsiveness of demand for a good to a given change in the income of consumers, ceteris paribus. Since income is falling, household would decrease spending more significantly on luxury goods since these goods are not essential. This result in YED >1 and demand would decrease more than proportionately to a given decrease in income, ceteris paribus. This is shown by a large leftward shift in demand curve from DD₀ to DD₁.



- The fall in demand would result in a **surplus** at the original equilibrium price, which puts a **downward pressure** on price to eliminate the surplus, until quantity demanded equals quantity supplied again. Hence the fall in income would lead to a **fall in equilibrium price and quantity of luxury goods** from P₀ to P₁ and Q₀ to Q₁ respectively.
- Since both price and quantity has fallen, expenditure on luxury goods would therefore decrease from area 0P₁CQ₀ to area 0P₂BQ₁.

Conclusion

Therefore, an increase in GST would reduce expenditure on luxury good as the increase in price would lead a to more than proportionate fall in quantity demanded while a fall in incomes would cause price and quantity to fall, causing a fall in expenditure of luxury goods.

Level	Knowledge, Understanding, Application, Analysis	Marks
L3	 Full display of AO1, AO2 and AO3 skills: For an answer that shows well-developed explanation of why an increase in GST AND a fall in incomes of many households are each expected to cause a fall expenditure on luxury goods. clear and accurate explanation of how changes in DD and SS lead to a fall in expenditure using PED and YED concepts supported with appropriate diagrammatic analysis supported with relevant examples 	8-10
L2	 Uneven display of AO1, AO2 and AO3 skills: For an answer that shows under-developed explanation of why an increase in GST and a fall in incomes of many households are each expected to cause a fall expenditure on luxury goods. lacks depth of analysis (i.e., limited effective use of relevant economic analysis or gaps in diagrammatic analysis) lacks scope in explaining either GST increase or fall in income lacks relevant examples 	5-7
L1	 Limited display of AO1 and AO2 skills: For an answer that shows limited knowledge of why an increase in GST AND a fall in incomes of many households are each expected to cause a fall expenditure on luxury goods. listing of points, unexplained statements, or descriptive response many conceptual errors (i.e., using AD/AS analysis, use PED with shift in demand, use XED etc) irrelevant response such as on economic growth or expenditure on necessity smattering of points 	1-4

Part (b) - Question Analysis

Approach	Command Word	Discuss whether \rightarrow balanced answer + evaluation
	Question Type	Cause and effect
	Start point	Raise in GST
	End Point	tax revenue, unintended consequences
Content	Content	Price mechanism, PED, equity
and Context	Context	Singapore

Introduction

State essay approach: The intended outcome of the increase in GST from 7% to 9% is to raise tax revenue in a sustainable manner to fund the increase in recurring healthcare expenditure due to an ageing population. However, this depends on whether the good is a luxury good or necessity. GST revenue collected from necessity will likely increase while GST revenue from luxury goods will likely decrease. The increase in GST might also lead to inequity as an unintended consequence without further government supports.

Body Point 1: Explain how raising GST might increase tax revenue

• As explained in part a, a raise in GST would result in a pivotal leftward shift of the supply curve, resulting in a fall in equilibrium quantity and increase in equilibrium price.



Figure 3: impact of GST on tax revenue collected from necessities

- A 7% GST is currently being levied in Singapore, resulting in equilibrium quantity Q₁ and P₁. Hence the original tax revenue collected from necessity, such as rice and healthcare services is area P₁E₁CP₃, as the total tax revenue equals to the amount of GST (vertical distance CE₁) multiply by quantity of goods and service sold (Q₁).
- With GST raising to 9%, the equilibrium price will increase further to P₂ while equilibrium quantity falls to Q₂. The new tax revenue collected would be area P₂E₂DP₄, as the new tax revenue equals to the amount of GST (vertical distance DE₂) multiply by quantity of goods and service sold (Q₂).
- Area P₂E₂DP₄ is likely bigger than area P₁E₁CP₃, indicating an increase in tax revenue collected, as the demand for necessity is price inelastic. Households are price insensitive to the increase in price as they would still need these essential items. Hence the increase in

price due to the increase in GST will lead to a less than proportionate decrease in quantity demanded, leading to the tax revenue gained from the 2% increase in tax rate to be larger than the tax revenue loss from the fall in consumption of these goods and services.

Body Point 2: Explain how raising GST might reduce tax revenue

• A raise in GST on luxury goods would also result in a pivotal leftward shift of the supply curve, resulting in a fall in equilibrium quantity and increase in equilibrium price.



Figure 4: impact of GST on tax revenue collected from luxury goods

- The original tax revenue collected from luxury good is area P₁E₁AP₃, as the total tax revenue equals to the amount of GST (vertical distance AE₁) multiply by quantity of goods and service sold (Q₁).
- With GST raising to 9%, the equilibrium price will increase further to P₂ while equilibrium quantity falls to Q₂. The new tax revenue collected would be area P₂E₂BP₄, as the new tax revenue equals to the amount of GST (vertical distance BE₂) multiply by quantity of goods and service sold (Q₂).
- Area P₂E₂BP₄ is likely smaller than area P₁E₁AP₃, indicating a fall in tax revenue collected, as the demand for luxury good is price elastic. This is because the increase in price due to the increase in GST will lead to a more than proportionate decrease in quantity demanded, leading to the tax revenue gained from the 2% increase in tax rate to be smaller than the tax revenue loss from the fall in consumption of these goods and services.

Intermediate EV – whether the raise in GST will increase tax revenue

- Therefore, whether the GST increase will raise tax revenue for the Singapore government depends on whether the increase in tax revenue raised from necessities would be greater than the decrease in tax revenue collected from luxury goods.
- It is more likely that the GST increase will raise tax revenue for the Singapore government as Singapore has one of the highest real GDP per capita in the world, hence luxury goods such as car, might be considered as a necessity in Singapore due to lower proportion of income spent on such goods. Therefore, even with the increase in GST, consumers in Singapore are unlikely to cut back on spending significantly as they are generally more price insensitive.
- Singapore is also a tourism hub and tourists are generally less price sensitive when spending overseas, hence GST collected from tourist will likely increase.

Body Point 3: Explain raising GST will lead to inequity

- GST is a regressive tax in nature. When the GST is raised, the absolute amount of GST paid by the higher income group will still be a smaller proportion of income than the lower income group for the same basket of goods and services. Hence the lower income group will bear a larger burden of the tax, which may worsen income inequity as an unintended consequence.
- Moreover, the increase in GST will raise the price of necessities to a large extent due to PED <1. Low-income households might not be able to afford these necessities, worsening inequity.

Intermediate EV – explain how the raise in GST might not lead to unintended consequences

- To prevent worsening equity, the Singapore government has introduced the Assurance package, aimed to cushion the impacts of the hike in GST for Singaporeans, especially the lower-income groups.
- This is a form of transfer payment, where GST Voucher cash pay-outs will be given to Singaporean households, with lower-income Singaporeans getting more cash to offset the increase in GST. This would ensure that Singaporeans who are relatively better off and non-Singaporeans will bear a greater burden of the GST, preventing inequity.

Summative Evaluation

- An increase in the GST would likely increase the Singapore government's tax revenue the most, compared to other types of tax. Expert has estimated that each increase of 1 percentage point would net an additional S\$1.5 billion to S\$1.8 billion per year. This is likely due to the large tax base
- The Singapore government has also put in place complementary policies to minimise the trade-off between fiscal sustainability and inequity.
- However, the ceteris paribus assumption might not hold in real life. For example, the rise in global food prices due to the war between Russian and Ukraine has increased the costs of living for Singaporeans. A GST hike in such circumstances might lead to worsening inequity even with Singapore support.
- Furthermore, some businesses might absorb the increase in GST instead of passing the tax increase to consumer in the form of higher prices as these firms might have alternative objectives. Hence there might not be any unintended consequence of worsening inequity.

Mark Scheme

Level	Knowledge, Understanding, Application, Analysis	Marks	
L3	Full display of AO1, AO2 and AO3 skills: For an answer that shows well-developed explanation of the impacts of GST	8-10	
	 hike on tax revenue and its unintended consequence well-supported with diagrammatic analysis well-supported with relevant examples 		
L2	 Uneven display of AO1, AO2 and AO3 skills: For an answer that shows under-developed explanation of the impacts of GST hike on tax revenue and its unintended consequence lacks depth of analysis (i.e. limited effective use of relevant economic analysis or gaps in diagrammatic analysis) lacks scope in impact on tax revenue or unintended consequence 	5-7	
	lacks appropriate examples		

L1	Limited display of AO1 and AO2 skills:	1-4
	For an answer that shows limited knowledge of the impacts of GST hike on	
	tax revenue and its unintended consequence	
	 listing of points, unexplained statements, or descriptive response 	
	 many conceptual errors (explain impact on total revenue instead of tax revenue, explain why GST increase is ineffective instead of unintended 	
	consequence	
	Smattering of points	

	Evaluation	Marks
E3	For an answer that builds on appropriate analysis to evaluate and synthesizes economic arguments to arrive at well-reasoned judgements on whether the increase in GST is likely to raise tax revenue and whether it will lead to unintended consequences.	5
E2	For an answer that makes some attempt at evaluation or a conclusion on whether the increase in GST is likely to raise tax revenue and whether it will lead to unintended consequences but does not explain the judgement or base it on analysis.	3-4
E1	For an answer that gives superficial evaluative statement(s) without supporting analysis and elaboration on whether the increase in GST is likely to raise tax revenue and whether it will lead to unintended consequences.	1-2

Additional Reference:

- <u>https://www.todayonline.com/singapore/where-spores-additional-tax-revenue-could-come-experts</u>
- https://www.straitstimes.com/singapore/budget-2022-assurance-package-increased-to-66-billion-gst-voucher-scheme-beefed-up-to-offset-gst-hike