Q2

The government collects revenue from sale of Certificate of Entitlement (COE). There have been large increases in the COE prices for cars in Singapore over the past few years.

Discuss the likely effects of higher COE prices on government revenue and expenditure by consumers on different types of cars. [25]

<table>
<tr><td colspan="3">INTRODUCTION</td></tr>
<tr><td colspan="3">The effects of the large rise in COE prices can be analysed using the demand-and-supply framework. Demand refers to the quantities of a good that consumers are willing and able to purchase at each possible price during a period of time, ceteris paribus, while supply refers to the quantities of a good that producers are willing and able to offer for sale at a given set of prices during a period of time, ceteris paribus. Consumer expenditure is the value that consumers spent on a particular good or service and is measured by equilibrium price multiplied by equilibrium quantity in the market.</td></tr>
<tr><td colspan="3">BODY</td></tr>
<tr><td colspan="3">Impact on Govt. Revenue</td></tr>
<tr><td>PES = 0</td><td colspan="2"><u>COE Supply</u>
COE supply is a quota decided by the govt. independently of prices. Hence it is has perfectly price inelastic supply.</td></tr>
<tr><td>PED > or < 1</td><td><u>COE Demand (PED > 1)</u>
(preferred)

COE prices in recent years are typically more than 50K and are a high proportion of the average income in Singapore. Hence the demand for COEs is likely to be price elastic.</td><td>OR <u>COE Demand (PED < 1)</u>
(own figure rule)

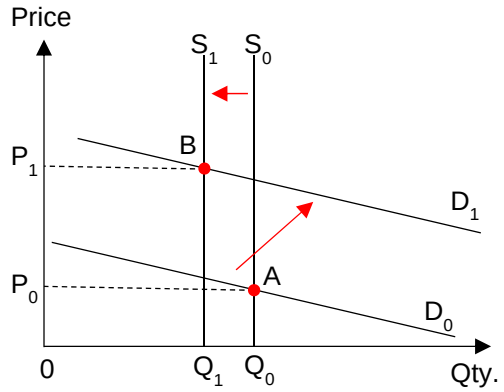
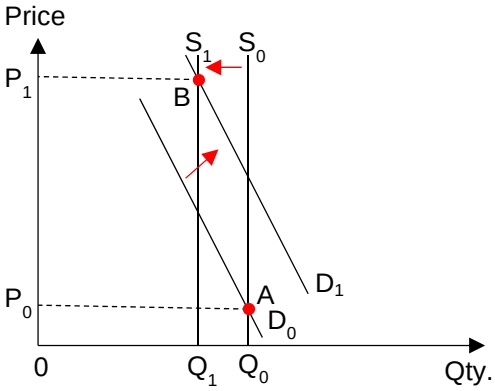
Purchasing a COE is a regulatory requirement for those who wish to purchase a car. Given this is a necessity, the demand for COEs is likely to be price inelastic.</td></tr>
<tr><td>Large ↑ in COE prices due to SS ↓</td><td>Thus if the ↑ in COE prices is due to a ↓ in COE supply, there will be a more than proportionate ↓ in quantity demanded for COEs, leading to a ↓ in COE revenue of the govt.

The ↓ in COE supply could be due to relatively low vehicle deregistrations & a lower vehicle growth rate to curb congestion.</td><td>Thus if the ↑ in COE prices is due to a ↓ in COE supply, there will be a less than proportionate ↓ in quantity demanded for COEs, leading to an ↑ in COE revenue of the govt.</td></tr>
<tr><td>Large ↑ in COE prices due to DD ↑</td><td>If the ↑ in COE prices is due to an ↑ in COE demand, the market equilibrium quantity will ↑ too. Hence there will be an ↑ in COE revenue of the govt.

The ↑ in COE demand is largely due to an ↑ in incomes & an ↑ in population in Singapore. COEs are normal goods, hence an ↑ in income would lead to an ↑ in the demand for COEs. An ↑ in population will cause the number of consumers to ↑ in the market for COEs, causing an ↑ in the total COE demand.</td><td>If the ↑ in COE prices is due to an ↑ in COE demand, the market equilibrium quantity will ↑ too. Hence there will be an ↑ in COE revenue of the govt.</td></tr>
<tr><td>Combined Effect</td><td>Hence the effect of an ↑ in COE prices on govt. COE revenue depends on if it was a demand or supply factor causing it. However it is more likely that the ↑ in COE prices is due to both factors but given their opposing effect on govt. COE revenue, the net impact is arguably indeterminate.

*Note: possible for candidates to raise other</td><td>Thus regardless of the reason behind the ↑ in COE prices, an ↑ in COE prices will ↑ the COE revenue of the govt.

*Note: possible for candidates to raise other combinations of DD & SS shifts that result in an ↑ in COE prices, as long as it is accompanied by sound economic analysis.</td></tr>
</table>

	combinations of DD & SS shifts that result in an ↑ in COE prices, as long as it is accompanied by sound economic analysis. E.g. it is possible for students to account for the large ↑ in COE prices with an ↑ in DD > ↑ in COE supply.	
Evaluation (or could be part of analysis above)	However, given the strong economic growth in Singapore & the steady ↑ in population due to her open labour immigration policies, it is more likely that the ↑ in DD outweighed any ↓ in COE supply.  As seen in the figure above, the large ↑ in COE demand compared to the ↓ in COE supply ↑es the govt. COE revenue from area $0Q_0AP_0$ to $0Q_1BP_1$.	The extent of ↑ in govt. COE revenue is likely to be large given the price inelastic demand and supply of COEs.  As seen in the figure above, the large ↑ in COE prices due to an ↑ in price inelastic demand & a ↓ in perfectly price inelastic supply results in a large ↑ in govt. COE revenue from area $0Q_0AP_0$ to $0Q_1BP_1$.
Impact on Expenditure on Different Types of Cars		
Link between COE prices & new cars	In Singapore, COEs are often bundled together with the sale of a new car. Hence COEs form a part of the cost of supplying a new car. Hence an ↑ in COE prices will lead to a ↓ in the supply of a new car.	
Diff. Types of Cars	**New Cars with PED < 1**	**New Cars with PED > 1**
Impact of ↑ in COE price on expenditure	In Singapore, cars below 1600cc are typically mass market cars (such as the Toyota Corolla) with relatively more affordable prices. Those who purchase such cars typically have a greater necessity for such cars due to reasons such as being physically challenged or due to a frequent need to travel on the job, such as for those in sales related jobs. Given the necessity of a car to them, their demand for new cars may be price inelastic. Hence when supply of such new cars ↓, there will only be a less than proportionate ↓ in quantity demanded for them, resulting in an ↑ in expenditure on such cars.	In Singapore, cars above 1600cc are typically luxury cars (such as BMWs & Mercedes) with relatively less affordable prices. Such luxurious models are typically not a necessity and given the relatively high proportion of income their prices command, the demand for such new cars is likely to be price elastic. Hence when supply of such new cars ↓, there will be a more than proportionate ↓ in quantity demanded for them, resulting in an ↓ in expenditure on such cars. ** Note: Candidates need not discuss in terms of cc. Can be simply brands of cars with diff. PED.*
Evaluation	Given the sharp ↑ in COE prices, the extent of ↓ in supply of new cars is likely to be significant, resulting in a significant ↑ in expd on non-luxury cars but a significant ↓ in expd. on luxury cars.	
	** Any other reasonable analysis or evaluation is acceptable too.* ** A diag. is not required given the relative simplicity of the analysis and assuming a sufficiently clear analysis of the impact on expd.*	
Impact on Expenditure on Different Types of Cars (Another Possible Alternative Analysis)		
Diff. Types of Cars	**New Cars**	**Used/Resale Cars**
Impact of ↑ in	In Singapore, COEs are often bundled together	Used cars are a substitute for new cars. Hence the

COE price on expenditure	with the sale of a new car. Hence COEs prices form part of the cost of supplying a new car. Hence an ↑ in COE prices will lead to a ↓ in the supply of a new car & hence an ↑ in the prices of new cars. Given the high COE prices, cars in Singapore typically cost above 100K even for the non-luxurious models. Hence their prices are a significant proportion of income. Furthermore, they are typically not a necessity due to the well-developed public transport system in Singapore. Thus the demand for new cars is price elastic. Hence when price of new cars ↑, there will be a more than proportionate ↓ in quantity demanded for them, resulting in a ↓ in expenditure on new cars.	↑ in price of new cars will lead an ↑ in demand for used cars. Ceteris paribus, this will lead to an ↑ in both the equilibrium price & quantity for used cars. Hence expenditure on used cars will ↑. *(Not suitable for exam conditions. FYI only)* *Furthermore, as prices of new cars climb, existing car owners would want to hold on to their cars longer and not sell their cars, leading to a ↓ in the supply of resale cars. Ceteris paribus, this will cause an increase in the price of resale cars but a ↓ in the quantity demanded. If the resale car models are price elastic (inelastic) in demand, there will be a fall (rise) in expenditure due to the more(less) than proportionate fall in quantity.* *Hence the net impact for resale cars with a price inelastic demand will be a rise in expenditures, while the net impact is indeterminate for those models that have a price elastic demand.*
Evaluation	However in recent years, there has been a considerable ↑ in the income levels of those who purchase new cars due to the relatively strong economic growth Singapore has been enjoying and the significant number of high net worth individuals she has been able to attract. Thus the demand for new cars may have become less price elastic over time and hence the ↓ in expenditure on new cars is expected to be smaller.	Used cars in Singapore are typically less than 10 years old & are hence comparable to the new car models in both features and quality. Given that they are close substitutes for new cars, the cross elasticity of demand between new and old cars is expected to be high. Hence the large ↑ in COE prices and hence the ↑ in prices of new cars, is expected to result in a more than proportionate ↑ in the demand for used cars. Thus a significant ↑ in expenditure on used cars is likely.

CONCLUSION

In recent years, years of healthy economic growth and rising incomes have caused the demand factors to be a stronger reason behind the large increase in COE prices. Given the demand-side nature of the increase, govt. COE revenues have been rising. As analysed above, the increase in COE prices doesn't bode well for sellers of new cars, especially for the more luxurious models while sparking a boom in the resale car market. However, the boom in the resale car market might be short-lived as high COE prices would cause car owners to hold back on buying new cars and hence reducing the supply of used cars in the resale car market, reducing the extent of increase in expenditures on used cars or even causing their expenditures to fall if the fall in used car supply overpowers the rise in demand for used cars.

OR (for the more in-depth analysis of the resale car mkt – not suitable for exam conditions. FYI only)

In recent years, years of healthy economic growth and rising incomes have caused demand factors to be a stronger reason behind the large increase in COE prices. Given the demand-side nature of the increase, govt. COE revenues have been rising. As analysed above, the increase in COE prices doesn't bode well for sellers of new cars, especially for the more luxurious models. For the resale car market, the net impact depends on the price elasticity of demand of the resale cars in concern. It can be argued that those who are put off by the high prices of new cars but still find a car a necessity would end up having a larger expenditure on cars as resale car prices climb due to their price inelastic demand. Those who have relatively lower incomes are who resale cars as their entry point into the market for private transportation would find than the rising resale car prices take up a large proportion of their income and end up spending less on resale cars due to their price elastic demand for them.

Marking Scheme

High L3 (18-21) Low L3 (15-17)	• Provides sufficient rigour/analysis to explain the likely combined impact of a fall in COE supply and rise in COE demand on government revenue. • A well-illustrated and explained diagram when explaining the impact on government revenue. (Diag. not required when explaining impact on different types of cars) • Provides sufficient rigour/analysis to explain the likely effect of higher COE prices on different types (min. two) of cars. • Analysis is strongly applied to the context of Singapore.
High L2 (12-14) Low L2 (10-11)	• May only consider the effect of higher COE prices on govt. revenue due to higher demand OR higher supply OR considers both demand and supply factors but lack rigour in analysis. • Lacking in or having a poor graphical analysis of the impact on government revenue. • Provides insufficient rigour/analysis to explain the likely effect of higher COE prices on different types (min. two) of cars. • Analysis is weakly applied to the context of Singapore (i.e. largely generic arguments). • Arguments may lack clarity and/or coherence • With some minor conceptual errors • Or considers only impact on government revenue OR consumer expenditure. (max. 11)
High L1 (6-9) Low L1 (1-5)	• Lacks the use of a demand-supply framework to explain the impact on government revenue and consumer expenditure. • Or has major conceptual errors in most parts • Or lacks the use of PED in the analysis. • Or only explains changes in demand and supply and the market but little coherent explanation of impact on PxQ
E2 (3-4)	• For an evaluative judgement based on economic analysis on the net impact on government revenue or the most likely effects on the expenditure on different types of cars.
E1 (1-2)	• For a summary of the impact on government revenue &/or expenditure on different type of cars with minimal judgment or one that is not supported by analysis.