**H2 Economics – Essay Model**
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Topic: Demand & Supply
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*In 2005, the rate of Goods & Services Tax (GST) in Singapore rose from 3% to 5%. Income rose by approximately 4.5% in 2005.*
*Explain the likely effect of this change in GST on expenditure by consumers on different types of goods. [10]*

The Goods and Services Tax (GST) is an *ad valorem* tax applied on all the goods and services across the entire economy of Singapore. Increasing the GST from 3% to 5% is a 2-percentage point increase but effectively an increase of 66% taxes paid out for consuming goods and services. A hike in this tax effectively raises the cost of production for the firms forcing them to cut back supply at every quantity of goods supplied. The fact that the tax is ad valorem means that the absolute amount of taxes paid out per unit of good is higher as the quantity of goods supplied to the market increases. This would alter the expenditure of consumers significantly, and differently depending on the type of goods being considered.

The diagram below shows the effect of increasing the GST on the supply in the market. As explain above, the fact that the tax varies with price rather than quantity of good means that the absolute amount of taxes collected increases as the quantity of goods consumed increases. In addition, more expensive goods will require higher taxes in absolute monetary terms. This reduction in supply naturally means that the quantity demanded in the market would become lower since the price at which the demand and supply ($S_{5\%\ Tax}$) intersect, which is the price of the good with taxes included is higher than before.

[Diagram of the demand and supply of a generic good in the economy; with 2 supply curves, $S_{3\%\ Tax}$ and $S_{5\%\ Tax}$; showing the 2 different price levels and equilibrium quantities]

By raising the price of the good and thus reducing quantity demanded in the market, one might expect the expenditure of consumers to decrease across all goods and services but this is not the case. The increase in prices of goods and services may actually raise the expenditure of consumers on particular type of goods. The expenditure of consumers would thus depend on the price elasticity of demand for particular goods and services. For those goods whose demand is price elastic, an increase in price of good would reduce expenditure just as the increase in prices of these goods would reduce revenue for producers assuming the absence of those taxes. As for goods whose demand is price inelastic, consumers would unfortunately have to increase their expenditure on them as a result of the GST increase.

When demand for a good is price elastic, like in the case of most ordinary consumer goods like televisions, computers, electrical appliances and books, quantity demanded falls more than proportionally with price increases. As a result the total expenditure on these goods will fall when the prices increase. This implies that the consumers would cut back on the purchase of these goods more significantly after the GST increases. Removing the supply curve from the market analysis and concentrating on the price change resulting from the GST increase would allow us to see this accurately as shown in the diagram below.

[Diagram of the price elastic demand downward sloping, label price levels before and after increase in taxes and show the different size of the area denoting the consumer expenditures]

The diagram shows how the expenditure before the tax increase is higher than the expenditure after the tax increase, implying that consumer expenditure on these goods will fall. This stands in contrast with the expenditure on goods whose demand is price inelastic. Necessities like rice, bread, toothpaste, salt and perhaps even newspapers have price inelastic demand and this means that the quantity demanded would fall less than proportionate to the price increase. As a result, the consumers would find themselves spending more on these goods than before.

[Diagram of the price inelastic demand downward sloping, label price levels before and after increase in taxes and show the different size of the area denoting the consumer expenditures]

Using the diagrammatic analysis, we do observe that the expenditure on price inelastic goods would be higher after the tax increase compared to before. Therefore, the consumer expenditure will rise for price inelastic goods while falling for price inelastic goods.

*Discuss whether the combined effect of the rise in incomes and the rise in GST is likely to cause the quantities of different types of goods sold to rise or fall? [15]*

The rise in incomes of 4.5% increase implies an average of 4.5% more disposable income for households; this increase in purchasing power should help to lift up the demand for goods and services across the entire economy but once again, the effect of the rising income on the demand for different types of goods would depend mainly on the income elasticity of demand for these goods. The combined effect of both the rise income, which inadvertently increases demand of all normal goods and the rise in GST, which reduces supply of all goods would therefore be much more complex to analyse.

First, we have to examine the magnitude of the rise in income and the rise in GST. The rise in income of 4.5% is basically a very tiny increase in purchasing power whereas the GST hike will raise cost of goods by about 2% though essentially the increase in taxes paid is actually 66%. As a result, for most goods, there is a possibility that the potential reduction in quantities demanded and supplied in the market would be more than compensated by the rise in incomes. On the other hand, for inferior goods, both the rise in income and GST are working to reduce the equilibrium quantity supplied and demanded in the market and thus the quantities of these goods, ranging from street hawker fare to supermarket house brand products sold would fall. This is demonstrated in the diagram below.

[Diagram of supply and demand both falling, thus resulting in much lower equilibrium quantity than previously]

As for goods that are both income and price inelastic, especially the necessities like rice, bread, sugar and salt; their demand is not exactly responsive to changes in income and the fact that people are willing to maintain their quantity demanded more or less even with price increases as a result of the GST hike, the quantity sold in the market would more or less remain the same despite the rise in income and GST since their effects would cancel out each other just nicely. Consumers would not consume less of the goods since they have sufficient income increase but then this increase is not enough to spur them to consume more of the good. Essentially the price would rise but the quantity would remain about the same.

Things become more complicated for other normal goods. When the goods are elastic both in terms of income elasticity and price elasticity of demand, then the level of elasticity matters. When the goods are income elastic enough, the demand would face pressure to increase sufficiently not only to offset the potential fall caused by the hike in GST but even rise above the level it was originally at. This would mean that the quantity sold in the market for these goods would increase. Particularly income elastic goods are luxury goods like jewelry, sport cars, and travel packages to high cost destinations. The rise in GST is unlikely to reduce consumption of these goods given that income is rising more than the GST hike. In contrast, goods that are not as income elastic, but still price elastic enough might see a fall in quantity sold in the market. These are the durable consumer goods like the televisions, hi-fi stereo sets and computers, which are not exactly luxuries but still price elastic since they are not necessities. For these goods, income rises would not spur additional purchases since the goods are rather durable and on the contrary, the price increases resulting from GST increase may cause consumers looking to upgrade their sets to put off their purchase.

As for the goods whose price elastic and income inelastic or the other way around, the relationship is a little more direct and less dependent on relative magnitude. For price elastic goods, if income is inelastic, the quantity sold in the market is likely to fall as shown in the diagram below:

[Diagram of supply before and after GST hike as well as 2 price elastic demand curves, showing the effects of the rise in incomes. The rise is small (since it is income inelastic) and therefore not enough to offset the fall in quantity demanded]

These goods are probably the toys for children that have little relationship with the income levels but more to do with the actual prices. On the contrary, for goods that is price inelastic and income elastic, the quantity sold in the market would rise significantly because the rise in demand would be able to more than compensate for the fall in quantity demanded resulting from the increase in taxes. And these are goods like gourmet food, which are normally consumed by a small group of devout who would not be sensitive to prices of these goods themselves but then severely constrained by their incomes. These results in the price inelastic coupled with income elastic demand.

[Diagram of supply before and after GST hike as well as 2 price inelastic demand curves, showing the effects of the rise in incomes. The rise is large (since it is income elastic) and therefore more than enough to offset the fall in quantity demanded]

As shown in the above analysis, the quantities of different types of goods sold in the market would differ given the combined effects of the rise in both income and the GST. The eventual effects largely depend on the price and income elasticity of demand of the different goods. Unfortunately, the rise in income is unlikely to be uniform in the country so if the income rise falls mainly on the wealthier class, they might end up saving more and thus the rise in incomes would do little to raise quantities of goods sold in the market. On the other hand, if it falls on other income groups, the types of goods they favour might rise in quantity sold but the rest of the goods would still face falling sales since the GST applied is across the entire spectrum of goods and services.