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IB Economics Paper 3 Question Bank

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1. Explain how changes in aggregate demand and aggregate supply will lead to changes in real GDP and the price level in a market economy. In your explanation, make sure to discuss the impact of both an increase in aggregate demand and an increase in aggregate supply on real GDP and the price level. Additionally, discuss any potential government or central bank policies that could be used to stabilize an economy in the event of demand-pull inflation or cost-push inflation.

Certainly, an increase in aggregate demand (AD) will lead to an increase in real GDP and an increase in the price level, while an increase in aggregate supply (AS) will lead to an increase in real GDP and a decrease in the price level.

The relationship between AD, AS, real GDP and the price level is represented by the aggregate demand-aggregate supply (AD-AS) model. In the short run, the economy operates at the point where AD and AS intersect, known as the equilibrium point. At this point, the economy is in macroeconomic equilibrium, where real GDP equals potential GDP and the price level is stable.

An increase in AD can be caused by factors such as an increase in consumer spending, an increase in government spending, or an increase in investment spending. This will cause the AD curve to shift rightward, leading to an increase in real GDP and an increase in the price level. This increase in price level is known as demand-pull inflation.

On the other hand, an increase in AS can be caused by factors such as an increase in productivity, a decrease in input costs, or an increase in the number of firms in the market. This will cause the AS curve to shift rightward, leading to an increase in real GDP and a decrease in the price level.

To stabilize an economy in the event of demand-pull inflation, the government or central bank can use monetary policy tools such as increasing interest rates, decreasing the money supply, or increasing reserve requirements for banks. These policies will decrease the AD, thus decreasing inflation.

Similarly, in the event of cost-push inflation, caused by an increase in production costs, the government or central bank can use expansionary fiscal policies such as decreasing taxes or increasing government spending, which will shift the AD curve to the right and increase aggregate demand, thus decreasing inflation.

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2. The table below shows the production and total cost data for a firm in the short run.

Quantity (units)	Total Cost (dollars)
0	200
1	220
2	240
3	260
4	280
5	300
6	320
7	340
8	360
9	380
10	400

Using the data provided, determine the firm's marginal cost at a production level of 10 units and interpret the results in terms of the firm's short-run production decision.

To determine the firm's marginal cost at a production level of 10 units, we need to calculate the change in total cost that results from a one-unit increase in production. In this case, the marginal cost at a production level of 10 units is (400 – 380) = 20 dollars.
Interpreting the results in terms of the firm's short-run production decision, we can see that the marginal cost of the 10th unit of production is 20 dollars. If the firm can sell this unit for more than 20 dollars, it would be profitable for the firm to produce an additional unit. If the price the firm can sell the unit for is less than 20 dollars, the firm should not produce that unit because it would result in a loss.
In this case the marginal cost at the 10th unit of production is just equal to the average variable cost, therefore the firm can't make more profit by producing more units.
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3. Consider the following data on GDP and total investment in country X:

Year	GDP (bn of $)	Total Investment (bn of $)
2010	100	20
2011	110	25
2012	120	30
2013	130	35
2014	140	40

a) Calculate the average growth rate of GDP from 2010 to 2014.

The average growth rate of GDP from 2010 to 2014 is (140/100)^(1/5) - 1 = 0.08 or 8%.

b) Calculate the average growth rate of total investment from 2010 to 2014.

The average growth rate of total investment from 2010 to 2014 is (40/20)(1/5) - 1 = 0.09 or 9%.

c) Use the data to calculate the average investment rate (i.e. the ratio of total investment to GDP) for the period 2010 to 2014.

The average investment rate is (20 + 25 + 30 + 35 + 40) / (100 + 110 + 120 + 130 + 140) = 0.23 or 23%.

d) Explain the relationship between the growth rate of GDP and the growth rate of total investment.

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The growth rate of GDP and the growth rate of total investment are both positive and close to each other, which suggests that total investment is positively related to GDP growth. In other words, as total investment increases, GDP also increases.

4.) Solve the following:

Table 1

Price of Product Y ($)	Quantity Demanded
20	100
15	120
10	150
5	180

Table 2

Income ($)	Quantity Demanded of Product Y
20000	100
25000	120
30000	150
35000	180

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Table 3

Price of Product Z ($)	Quantity Demanded of Product Z
5	100
10	110
15	120
20	130

a) Using the data from Table 1, calculate the price elasticity of demand for Product Y. Show all calculations.

PED = % change in quantity demanded / % change in price
The elasticity of demand between $20 and $15 is -25% / 20% = -1.25

b) What does your calculation in (a) suggest about the responsiveness of demand for Product Y to changes in its price?

The price elasticity of demand between $20 and $15 is -1.25 which means that the demand for Product Y is inelastic to changes in price. It implies that a small change in price causes a proportionally smaller change in the quantity demanded. This suggests that the consumers of Product Y are less responsive to changes in the price of the product.

c) Using the data from Table 2, calculate the income elasticity of demand for Product Y. Show all calculations.

YED= % change in quantity demanded / % change in income
The elasticity of demand between $20,000 and $25,000 is 20% / 25% = 0.8

d) What does your calculation in (c) suggest about the relationship between consumers' incomes and the demand for Product Y?

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The income elasticity of demand between $20,000 and $25,000 is 0.8, which means that the demand for Product Y is relatively elastic to changes in consumers' income. This suggests that as consumers' incomes increase, the demand for Product Y will also increase relatively in proportion.

e) Using the data from Table 3, calculate the cross-price elasticity of demand for Product Y with respect to Product Z. Show all calculations.

XED = % change in quantity demanded of Product Y / % change in price of Product Z
The cross-price elasticity of demand between $5 and $10 is 9.1% / 50% = 0.18

f) What does your calculation in (e) suggest about the relationship between Product Y and Product Z in terms of their substitutes or complements?

The cross-price elasticity of demand between $5 and $10 is 0.18 which is relatively low, this suggests that products Y and Z are not strong substitutes or complements. It implies that a small change in price of Product Z causes a small change in the quantity demanded of Product Y.

g) Explain how government policies such as subsidies or taxes can affect the price elasticity of demand

Government policies such as subsidies or taxes can affect the price elasticity of demand in several ways.

Subsidies:

A subsidy is a direct payment from the government to producers or consumers of a good or service, which reduces the cost of production or the price of the good or service. Subsidies can have an effect on the price elasticity of demand by making the good or service more affordable for consumers. This can result in an increase in quantity demanded and a decrease in the elasticity of demand, making the demand more inelastic.

For example, if the government provides a subsidy to farmers producing a certain crop, the cost of producing that crop will decrease. This will result in a decrease in the price of the crop and make it more affordable for consumers. As a result, the quantity demanded for the crop will increase and the price elasticity of demand will decrease, making the demand more inelastic.

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Taxes:
A tax is a mandatory payment to the government imposed on producers or consumers of a good or service, which increases the cost of production or the price of the good or service. Taxes can have an effect on the price elasticity of demand by making the good or service less affordable for consumers. This can result in a decrease in quantity demanded and an increase in the elasticity of demand, making the demand more elastic.
For example, if the government imposes a tax on a certain product, the price of the product will increase, and make it less affordable for consumers. As a result, the quantity demanded for the product will decrease and the price elasticity of demand will increase, making the demand more elastic.
It is important to note that while subsidies and taxes can affect the elasticity of demand, other factors such as availability of substitutes, consumer income, consumer preferences also play a crucial role. The impact of government policies on price elasticity of demand will depend on the unique characteristics of the good or service in question, as well as the specifics of the policy itself.

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+91 9540653900