

④ Derive graphically income effect, price effect and substitution effect.

Date	/	/	①
Page No.			

Commodity prices frequently change in the real world and it is important to examine their effect on consumer behaviour. A change in commodity prices changes the consumer budget line, and this affects consumer expenditures. So, it is necessary to examine how the consumer reaches a new optimum position when the price of a good changes but the price of other good, income, taste etc remain unchanged.

Changes in the prices of any commodity leads to change in its demand and change in budget line. Generally, the change in price effect which is total effect is the sum of substitution effect and income effect.

There are two methods of explaining the effects of price change i.e. Hicksian approach and Slutsky method. In Hicksian method compensation is given to remain in initial indifference curve.

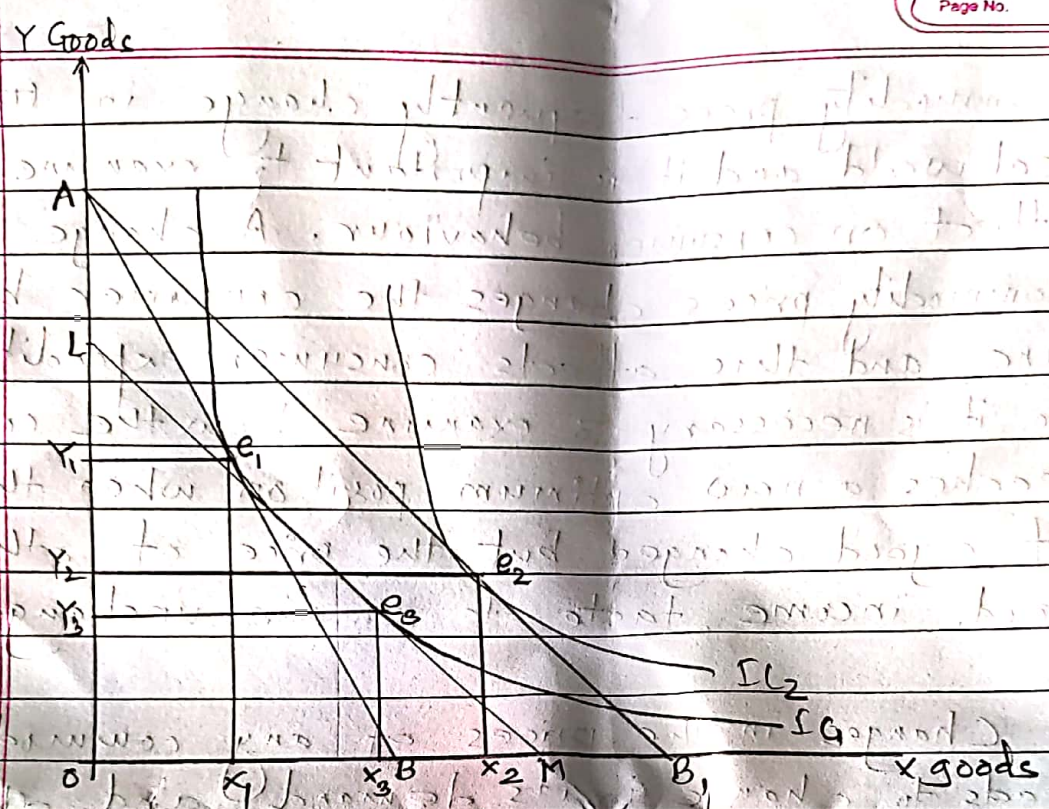
Here, we follow Hicksian approach to separate price effect into income effect and substitution effect.





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Date / /  
Page No.



To the above figure, the initial budget line is AB and the consumer gets maximum utility in point  $E_1$ , getting combination of  $OY_1$  of Y commodity and  $OX_1$  of X commodity. Now, it has been supposed that the price of X has fell down. Due to decrease in price of X a consumer's purchasing power increases i.e. the increase in real income. So, the budget line shifts rightward to  $AB_1$  from AB. The increase or rightward shift of budget line enables the availability of goods X (more). The increase in availability of goods increase consumer's satisfaction i.e. rightward shift of





(3)

Date	/	/
Page No.		

indifference curve as shown in the above figure. The shift from  $e_1$  to  $e_2$  is total effect or price effect which is also called Marshallian effect. Now, let's suppose that the real income has not been increased. It means there is only decrease in price of  $x$ .

To be more informative of this concept let's draw an imaginary or compensated budget line  $LM$  parallel to new budget line which is tangent to initial indifference curve  $IC_1$  at point  $e_3$ . The position  $LM$  is called compensation variation. So, the shift from  $e_1$  combination to  $e_3$  combination is compensated or substitution effect — and popularly known as Hicksian effect where monetary effect is held constant. The monetary effect or decrease in real income is portrayed by shifting from combination  $e_2$  to  $e_3$ .

Conclusion.

$$\underbrace{e_1 \Rightarrow e_2}_{\text{(Price Effect)}} \Rightarrow \underbrace{e_1 \Rightarrow e_3}_{\text{Substitution Effect}} + \underbrace{e_2 \Rightarrow e_3}_{\text{Income Effect}}$$

$$\left\{ \begin{array}{l} x_1 x_2 \\ \text{PE} \end{array} \right\} \Rightarrow \left\{ \begin{array}{l} x_1 x_2 + x_3 x_2 \\ \text{S.E.} + \text{I.E.} \end{array} \right\}$$

