

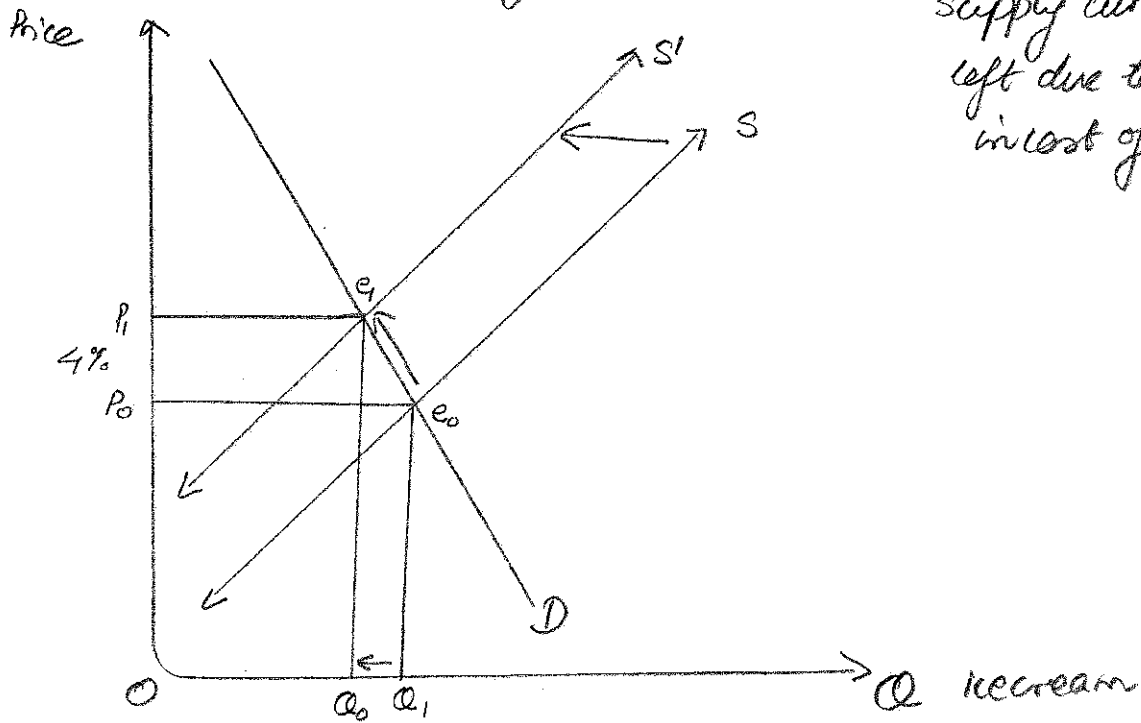
Problem Set #3
PPA 723

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Quest 1 increase in an input in production by 71% to \$2.22
increase in price 4%
fall in quantity demanded 3%

a) price elasticity of demand = $\frac{\% \text{ in } Q}{\% \text{ in } P} = \frac{-3\%}{4\%} = -0.75$
demand is relatively inelastic,

supply curves move left due to increase in cost of production



b) Price elasticity of demand, own price elasticity as a change
c) in price of increase (due fall in supply) lead to a decline in demand of icecreams

d) $E_{px} = -0.75$ implying it is inelastic, implying lesser availability of substitutes for icecreams.

Ques 2. average increase in ticket price from last year = 4.2%

Increase in ticket price from last 4 years = 100%

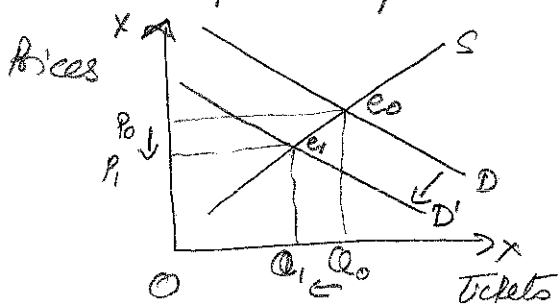
Decline in ticket sales from last year = -15.5%

a) Own price elasticity is implied for the demand for concert tickets

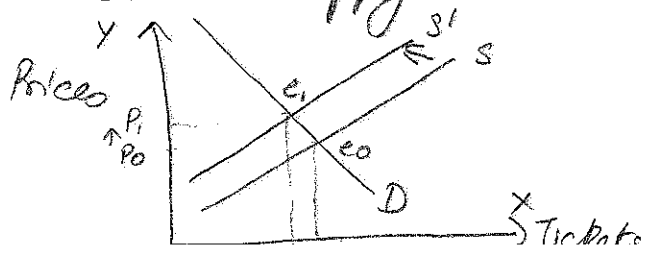
$$exp = \frac{\% \Delta Q}{\% \Delta P} = \frac{-15.5\%}{4.2\%} = -3.69$$

b) since $|exp| = 3.69 > 1$ it is highly elastic, concertgoers are really sensitive to changes in ticket prices.

(c) If the change would have been due to change in consumer preferences or technological improvement, leading to shift in demand curve, we would have seen a fall in prices as well as quantity.



However we have an increase in price by 4.2% and a fall in ticket sales, this is more consistent with a supply shock.



d) (i) The tax revenue per ticket

$$= \alpha P$$

$$= 0.12 \times 46.69$$

$$= \$ 5.60 \text{ per ticket}$$

(ii) The suppliers receive -

$$= (1 - \alpha) p$$

$$= 0.88 \times 46.69$$

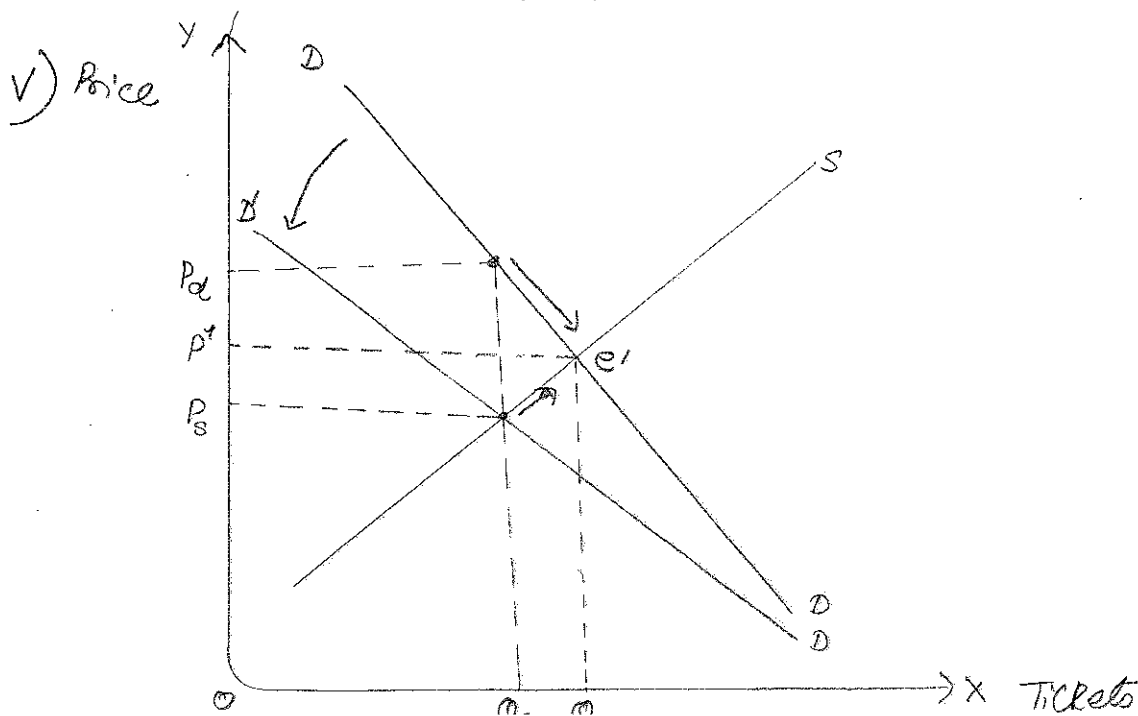
$$= 41.09$$

$$\text{cross check} = 41.09 + 5.60 = 46.69$$

$$P_s + \alpha = P_c$$

(iii) If taxes were removed then the market would move to an equilibrium at e_1 with an increase in price received by suppliers. (see graph)

iv) Also the quantity of ticket sold would increase



Ques 3 Price of good 1 be $P_x = 3$

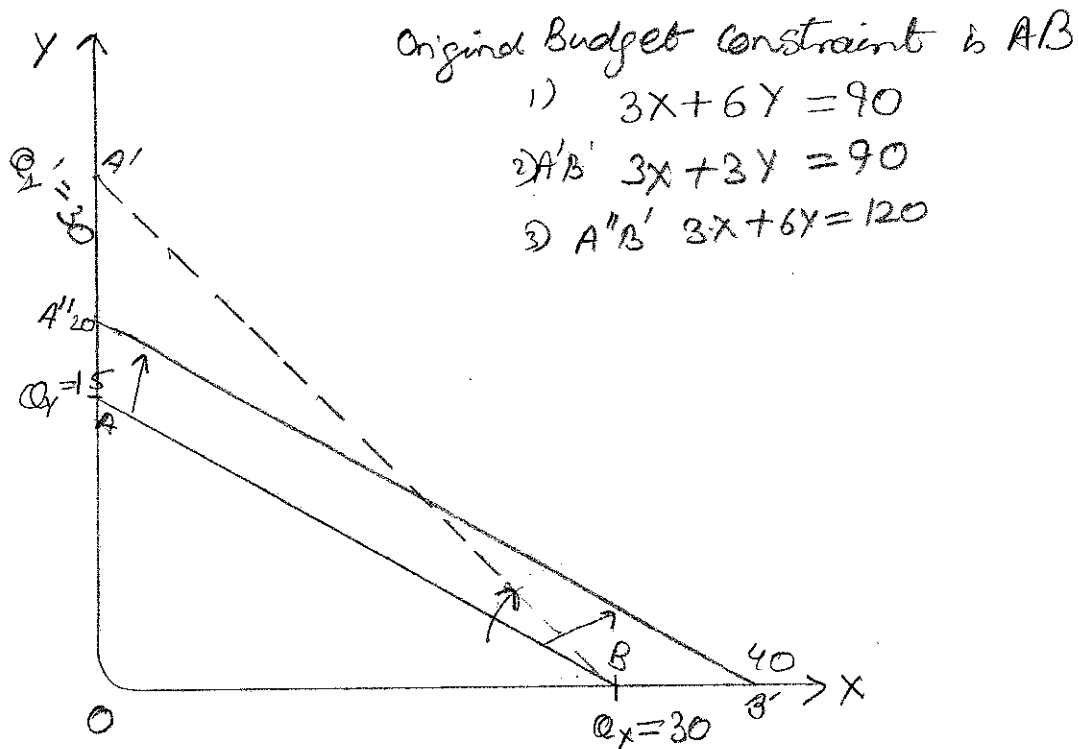
Price of good 2 be $P_y = 6$

Consumer's income = \$90

If all income spent on X $\Rightarrow Q_x = \frac{90}{3} = 30$

If all income spent on Y $\Rightarrow Q_y = \frac{90}{6} = 15$

a)



b) if price of good 2 falls from 6 to 3 then the new budget constraint could be

$$3X + 3Y = 90 \quad (\text{at } X=0, Y=30)$$

the budget line AB would swivel around at B to A'B' (see above figure)

c) if the income increases to 120 at original prices then, the new budget constraint could be

$$3X + 6Y = 120$$

with intercepts $X=40$, $Y=20$.

as relative prices are unchanged, the budget line is shifted parallel outward as the income is increased to $A''B'$

d) if income rises to \$180

P_x increased to \$6

P_y also increased to \$12 per unit

then new budget constraint will be

$$6X + 12Y = 180$$

with intercepts as $X = 30$ & $Y = 15$ and thus will be the same as original budget constraint AB

Note: here if all the nominal variables change in the same proportion and in the same direction (a monotonic transformation) then the budget set remains unchanged.

Ques 4 Pork is preferred to chicken $P \textcircled{P} C$
Chicken is preferred to beef $C \textcircled{P} B$

Now by the law of transitivity
if $P \textcircled{P} C \wedge C \textcircled{P} B$

then $P \textcircled{P} B$ i.e. pork must also be
preferred to beef

So, if we say the reverse, i.e. beef is preferred
to pork we violate the transitivity property and
our preferences are inconsistent

Ques 5 let the goods be 1 and 2 plotted on X & Y axis respectively

Bundle A (2, 3)

bundle B (1, 2)

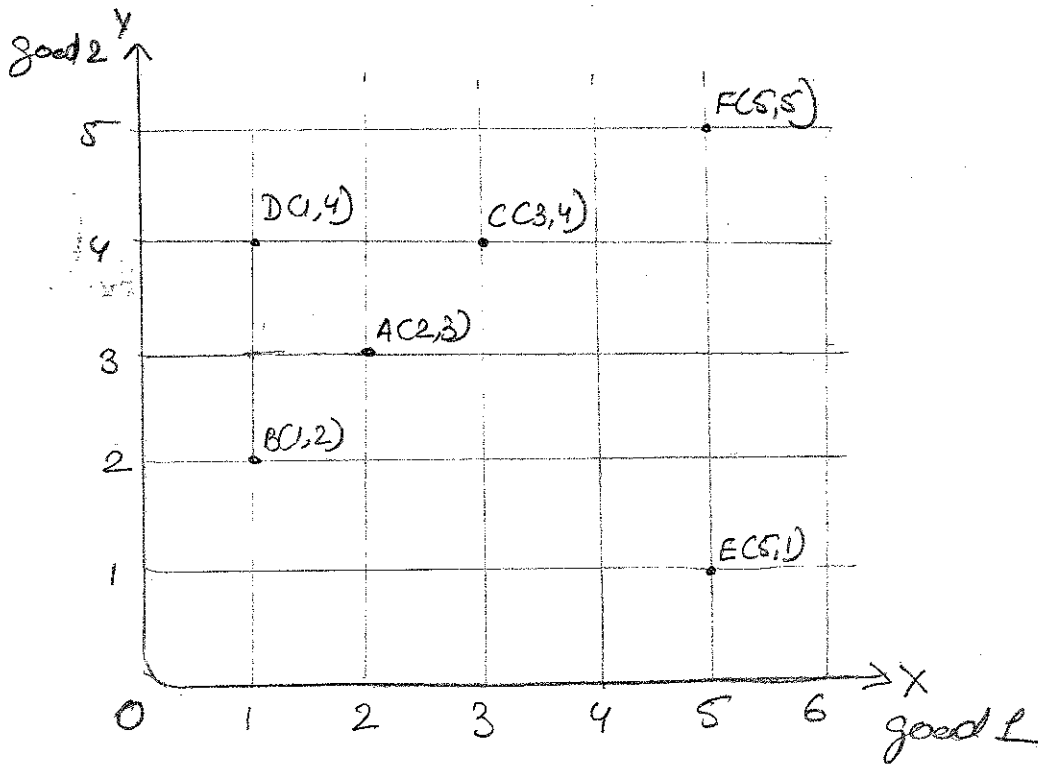
bundle C (3, 4)

bundle D (1, 4)

bundle E (5, 1)

bundle F (5, 5)

reference rule is
more is better



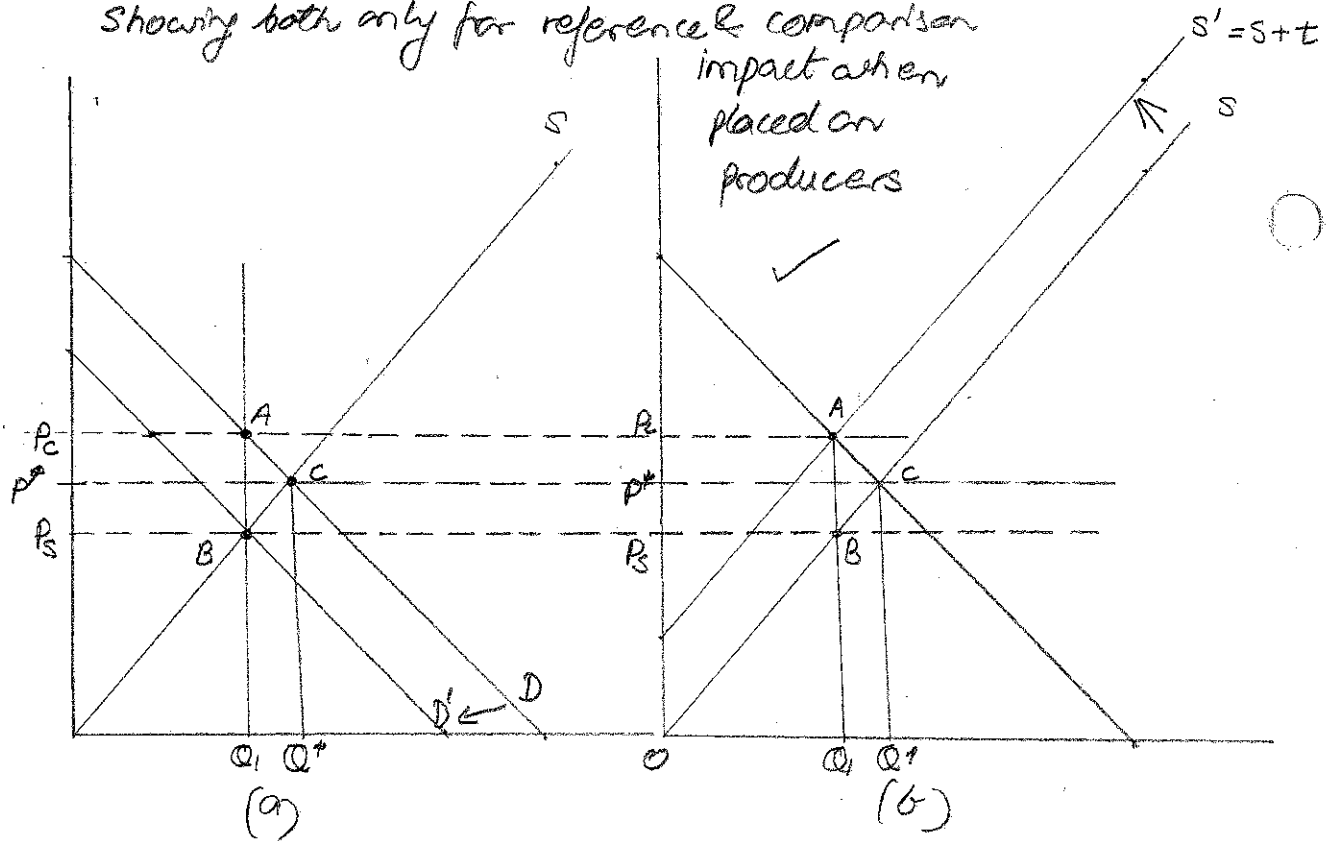
- 1) between A & B, A is more preferred
- 2) between A & C, C is preferred
- 3) between A & D, need more information
- 4) between A & E, need more information
- 5) between A & F, F is more preferred.

Ques 6 Please see notes

Ques (6)

Showing both only for reference & comparison

impact when placed on producers



a) specific tax imposed, (a) when shown by shifting demand curve, (b) when shown by shifting supply curve

pre tax (no-tax) equilibrium $P^* Q^*$

per unit tax = t

post tax, quantity Q_1

new price paid by consumers = P_c

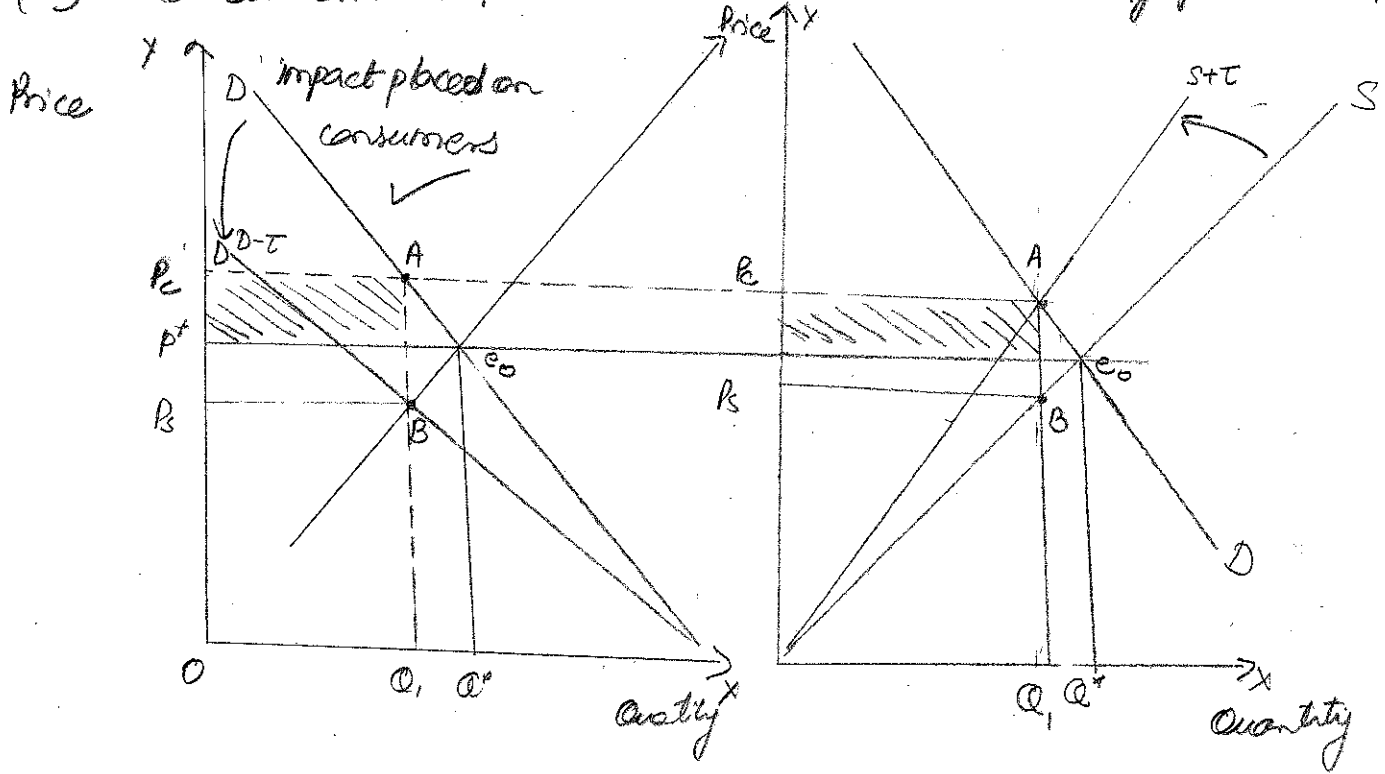
new price paid by suppliers = P_s

tax revenue = $t Q_1$

consumer burden of tax = $(P_c - P^*) Q_1$

producer burden of tax = $(P^* - P_s) Q_1$

(b) advertisement tax (shows both incidences only for comparison)



pre-tax (no tax) equilibrium $P^* Q^*$

post tax
 price paid by consumers P_c
 price paid by producers P_s

c) consumer incidence $CI = \frac{P_c - P^*}{\Delta P^c(\tau)}$

i.e. the share of burden of the tax that takes the form of an increased price paid by the consumer compared to the tax price