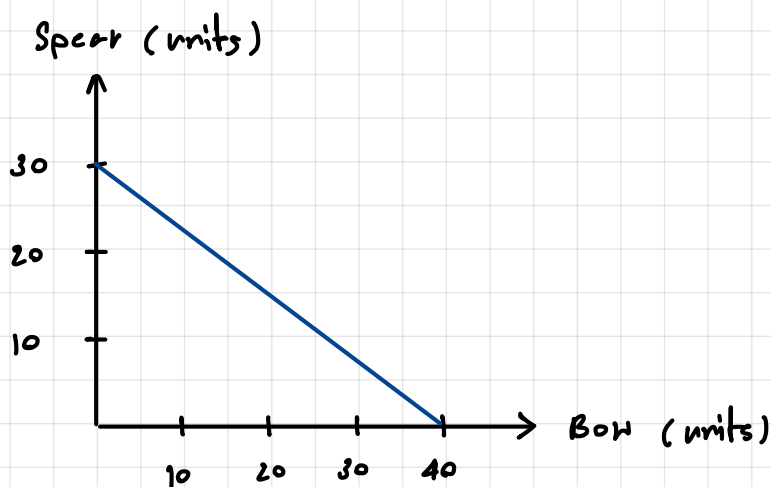


1) a)



Producing spear needs to use 4 units of wood. Therefore, using all resources 120 units of wood can produce 30 units of spear.

In the same case, producing bow needs to use 3 units of wood. So when using all resources 120 units of wood can produce 40 units of bow.

b) Using all amount of woods to produce 30 units of spear will need to give up 40 units of bow.

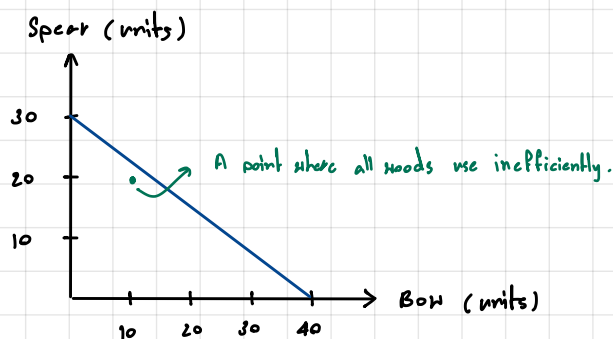
So, 1 unit of spear will be give up $\frac{40}{30} = \frac{4}{3}$ units of bow.

Therefore, the opportunity cost for a spear is $\frac{4}{3}$ units of bow.

c) When the civilization produces 20 spears, this means they used up 80 units of wood. (4 x 20)

To use all of resources (120 units of wood) efficiently, the less amount of woods (another 40 units of wood) can use to produce $(\frac{40}{3} = 13.33)$ 13.33 units of bow.

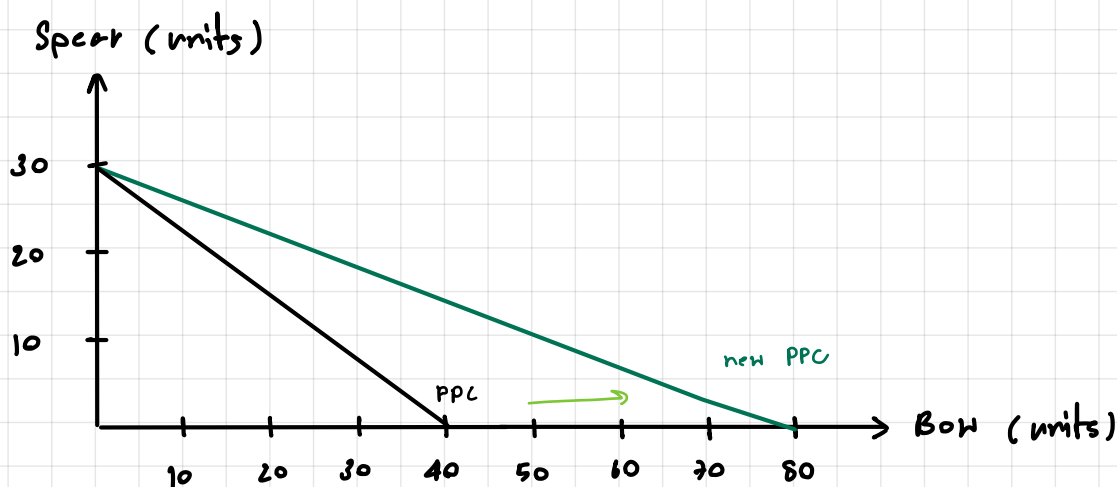
Therefore, producing 20 spears and 12 bows represent at a point below the PPC curve where all woods are not fully utilised. So, it indicates some inefficiency in the production, where the potential output is not maximized.



d) A new method of making bows will lead to an improvement in the productivity, this leads to a greater output produced of bows

Before it takes 3 units of woods to produce 1 bow but, after the new method, it takes only 1.5 units of woods to produce 1 bow. Therefore, the amount of bow is increasing twice than before when using the same amount of woods.

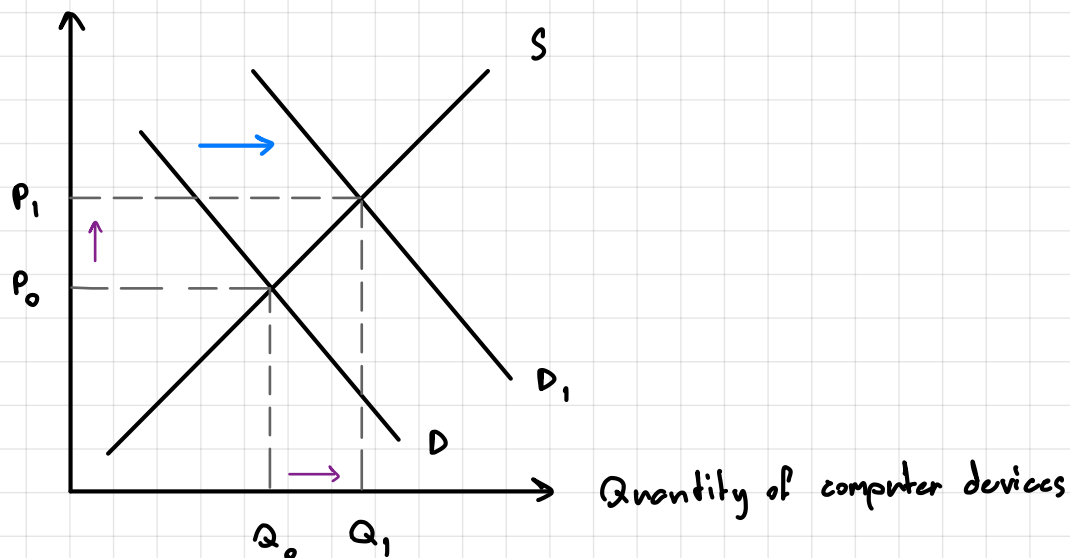
So, The opportunity cost for producing 1 unit of spear would also be twice as much as before which is $\frac{4}{3}(2) = \frac{8}{3}$ units of bow.
(assume there is no change in the productivity of spear)



2)

a)

Price of computer devices

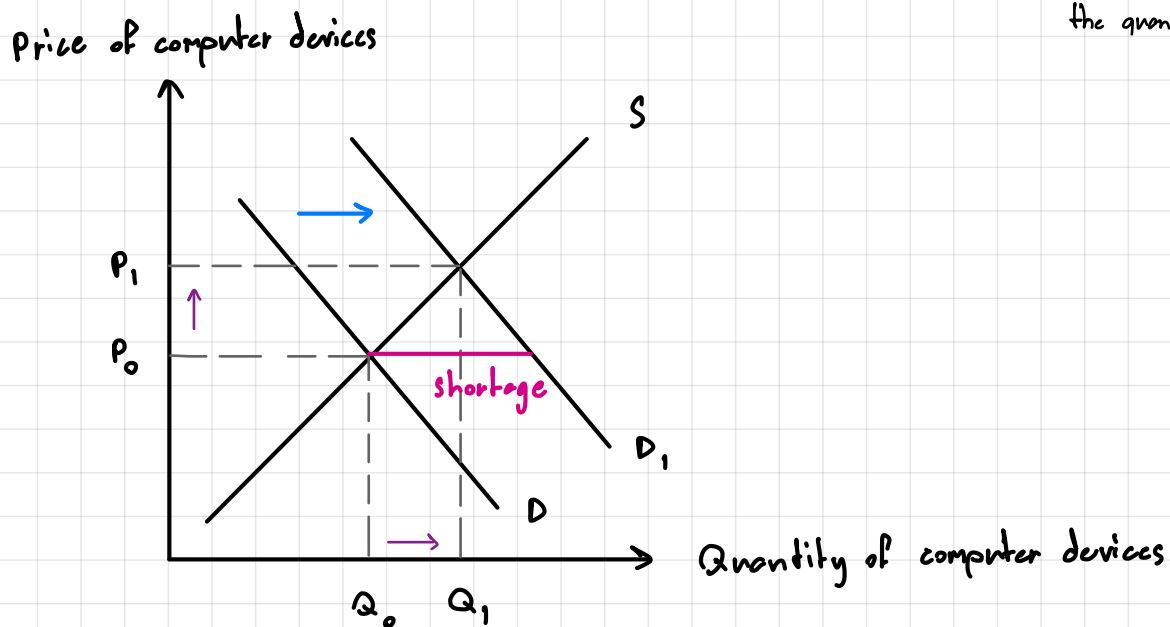


During the pandemic, many people are assigned to work from home and use computer devices for their work careers, this increases an incentive for people to own computer devices.

The demand for computer devices will rise, indicating a shift in demand curve from D to D_1 .

However, the market supply of computer devices will not change in the short run as suppliers are not getting an influence from the change in workers' behaviors.

b) At P_0 , there is an excess demand or shortage where the quantity demanded greater than the quantity supplied.

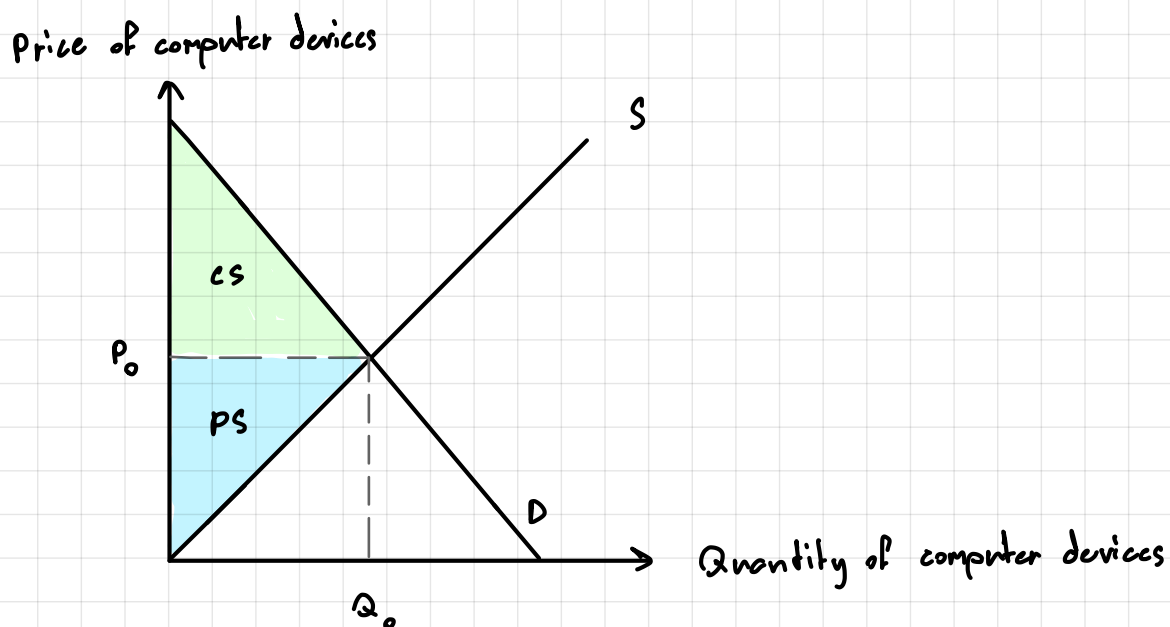


Excess demand drives the price of computer devices to increase as the products become scarce.

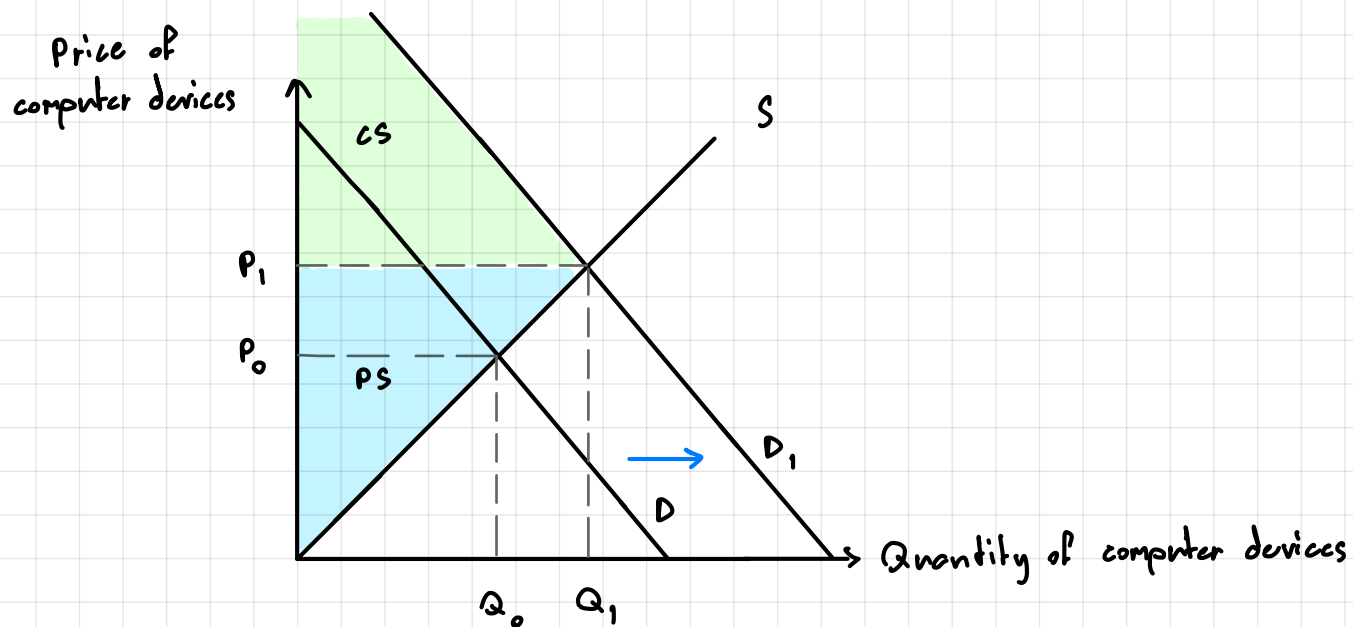
Since a price is now higher to P_1 , this incentivizes firms to supply more of computer devices from Q_0 to Q_1 . So, the pandemic causes an increase in price and quantity,

and now the new equilibrium point is at P_1 and Q_1 where it eliminates the shortage.

c) Before the pandemic;



During the pandemic; (new CS and PS)



During the pandemic, the upwards shift of demand and rising price of computer devices can benefit suppliers to supply more products and gain higher revenue.

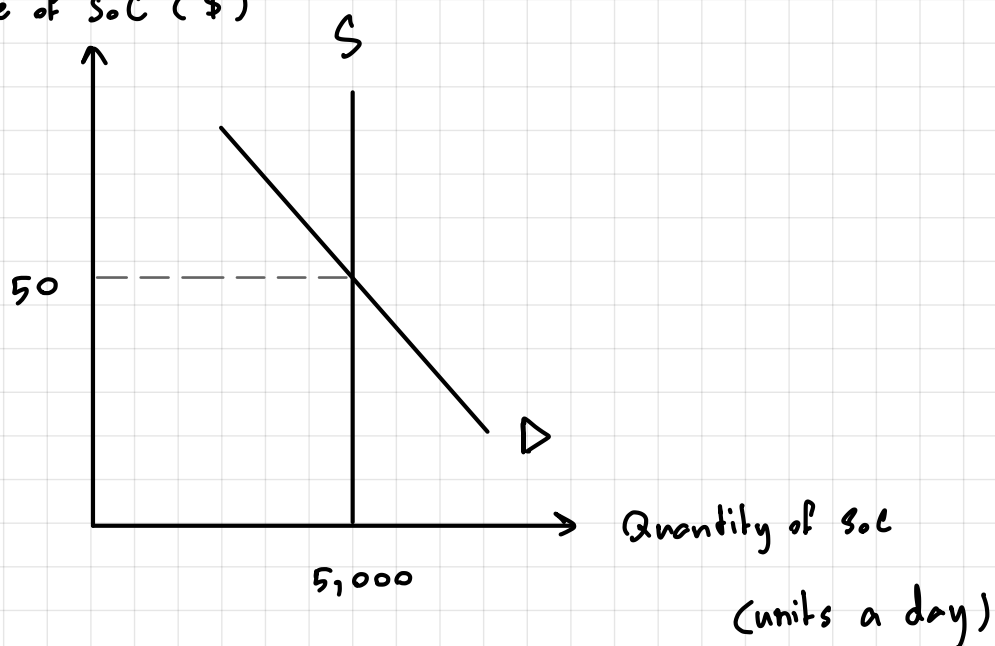
However, some consumers may lose willingness to buy computer devices at higher price.

Therefore, the producer surplus will become larger while the consumer surplus is uncertain, depends on the level of the elasticity of demand of computer devices and the size of increasing demand per 1 value of price.

3)

a)

Price of S.O.C (\$)



b)

$$P_1 = 50$$

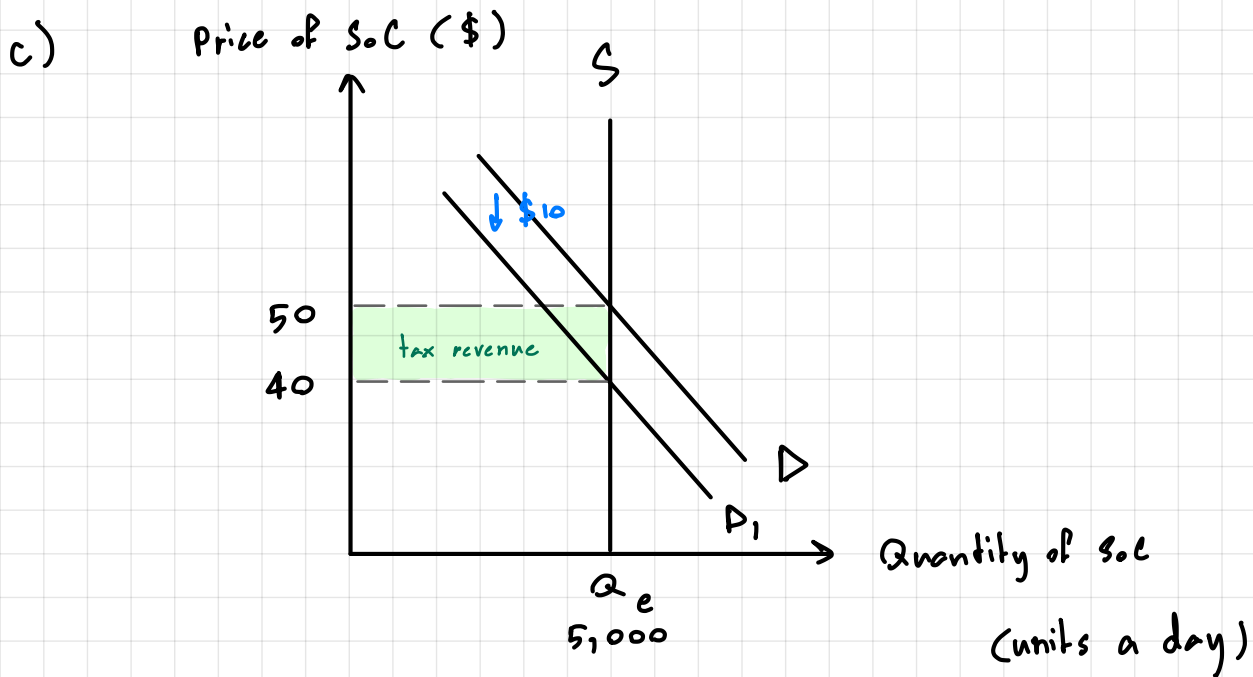
$$P_2 = 40$$

$$Q_{D1} = 5000$$

$$Q_{D2} = 5500$$

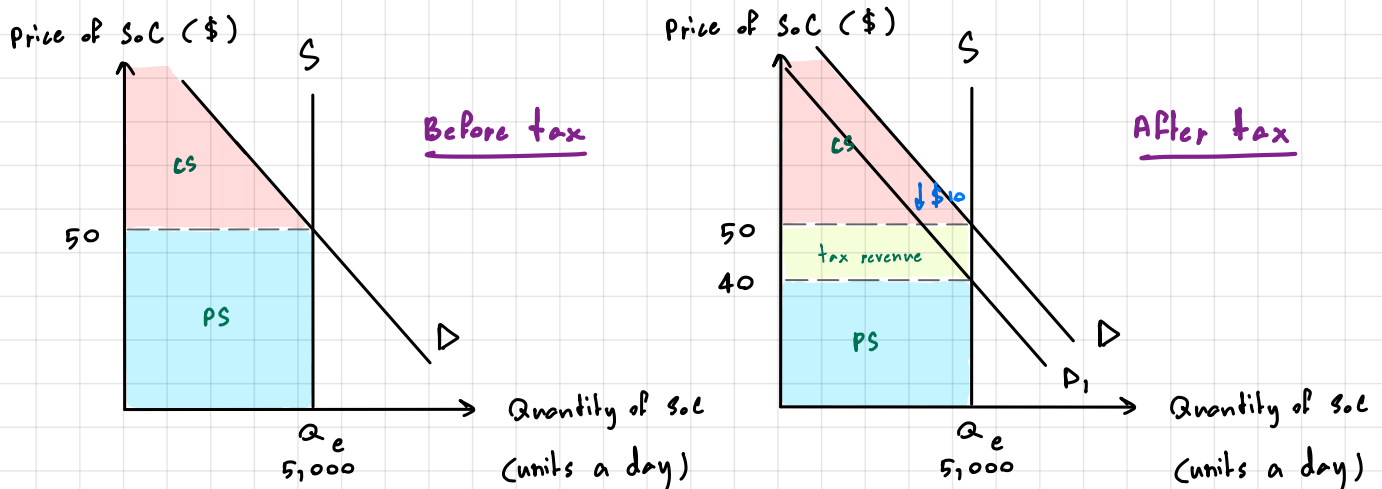
$$\begin{aligned}
 PED &= \frac{\text{percentage of } \Delta Q_D}{\text{percentage of } \Delta P} = \frac{\frac{5500 - 5000}{10500} \cdot 100}{\frac{40 - 50}{90} \cdot 100} \\
 &= \frac{\frac{500}{5250}}{\frac{-10}{45}} = \frac{2}{21} \left(-\frac{9}{2} \right) = -0.429 \\
 &\approx -0.43
 \end{aligned}$$

$$\begin{aligned}
 PES &= \frac{\text{percentage of } \Delta Q_S}{\text{percentage of } \Delta P} = \frac{\text{no change in } Q_S}{\frac{40 - 50}{90} \cdot 100} \\
 &= \frac{0}{\frac{-10}{45}} = 0
 \end{aligned}$$



A \$10 unit tax imposed on buyers will decrease the demand of the SOC market. This adjusts a price to be lower from \$50 to \$40. Therefore, a new equilibrium price is \$40, while the equilibrium quantity is still at 5,000 units a day due to a perfectly inelastic supply.

When supply is perfectly inelastic, a rising price does not alter how much producers sell. So, the quantity supplied remains constant at Q_e even after the government collects tax revenue equal to the green rectangle.



Due to the graph above, the consumer surplus is remained after the imposing tax. However, the producer surplus is reduced. Some of the producer surplus has lost to the tax revenue. Therefore, when supply is inelastic, the total tax incidence is on producers.

Deadweight loss is the decrease in economic activity caused by market distortions. So, when the quantity demanded is constant, no dead weight loss will represent.