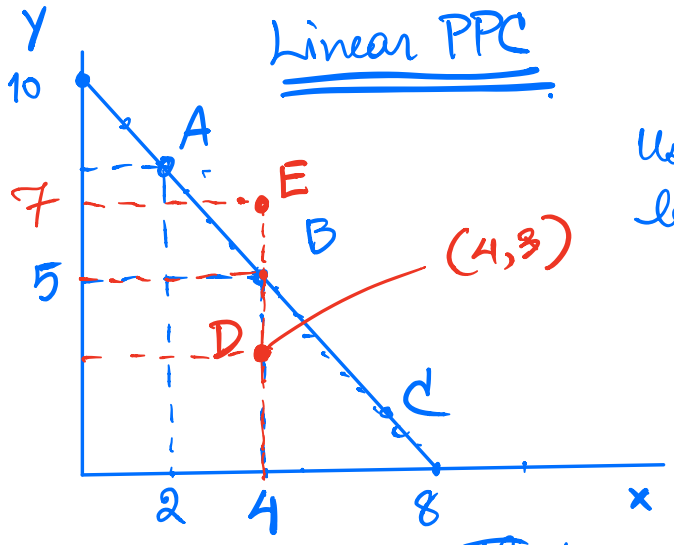
Production Possibility Curve. (PPC)

A given economy has a certain amount of resources (land, labor, capital), what can the economy produce at the most efficient possible way.

Assumptions

1) The economy can produce 2 products (X + Y)
2) Limited resources (Land, Labor, capital)
3) Full Employment.
4) Full Efficiency – no waste, using the best technology available.
5) Fixed Technology.



Linear PPC

x = Food
y = Clothes.

Using all resources with the best technology at full efficiency

max x = 8 tons
max y = 10 thousand pieces.

$Y = 10 - \frac{10}{8}X$
$= 10 - 1.25X.$

PPC demonstrates that

1) Every point on PPC is the max x+y that can be produced by the economy

2) Any point below PPC is inefficient, not full employment or not best technology

3) Any point above PPC is impossible.

4) Scarcity of resources ⇒ scarcity of X+Y

If we want more of X, we have to sacrifice some of Y.

X	Y
0	10
1	8.75
2	7.5
3	6.25
4	5
5	3.75
6	2.5
7	1.25
8	0

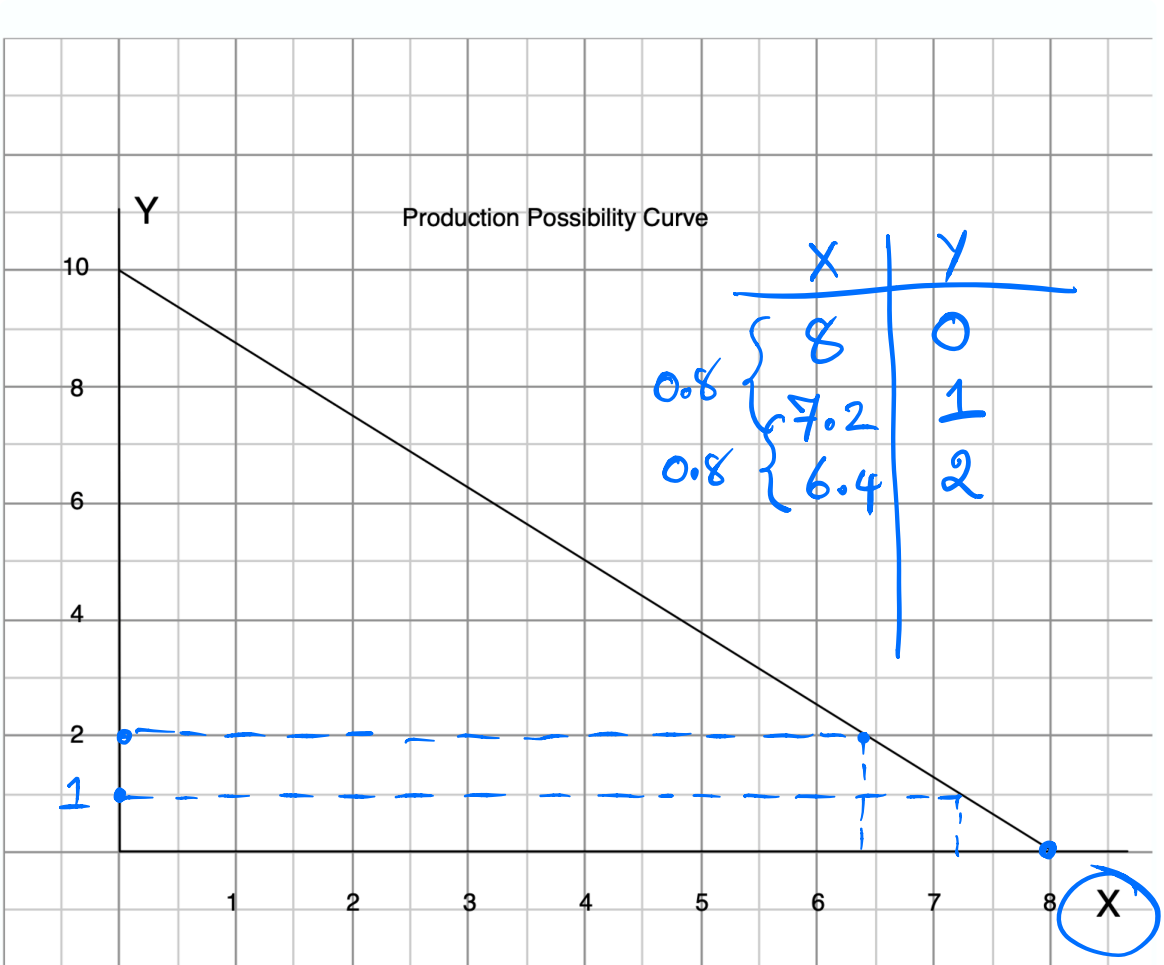
$Y = 10 - 1.25X$

5 Each additional unit of X

⇒ 1.25 units loss of Y.

1.25 unit of Y = the opp cost of each additional unit of X.

= − slope of PPC. (with X as horizontal axis.

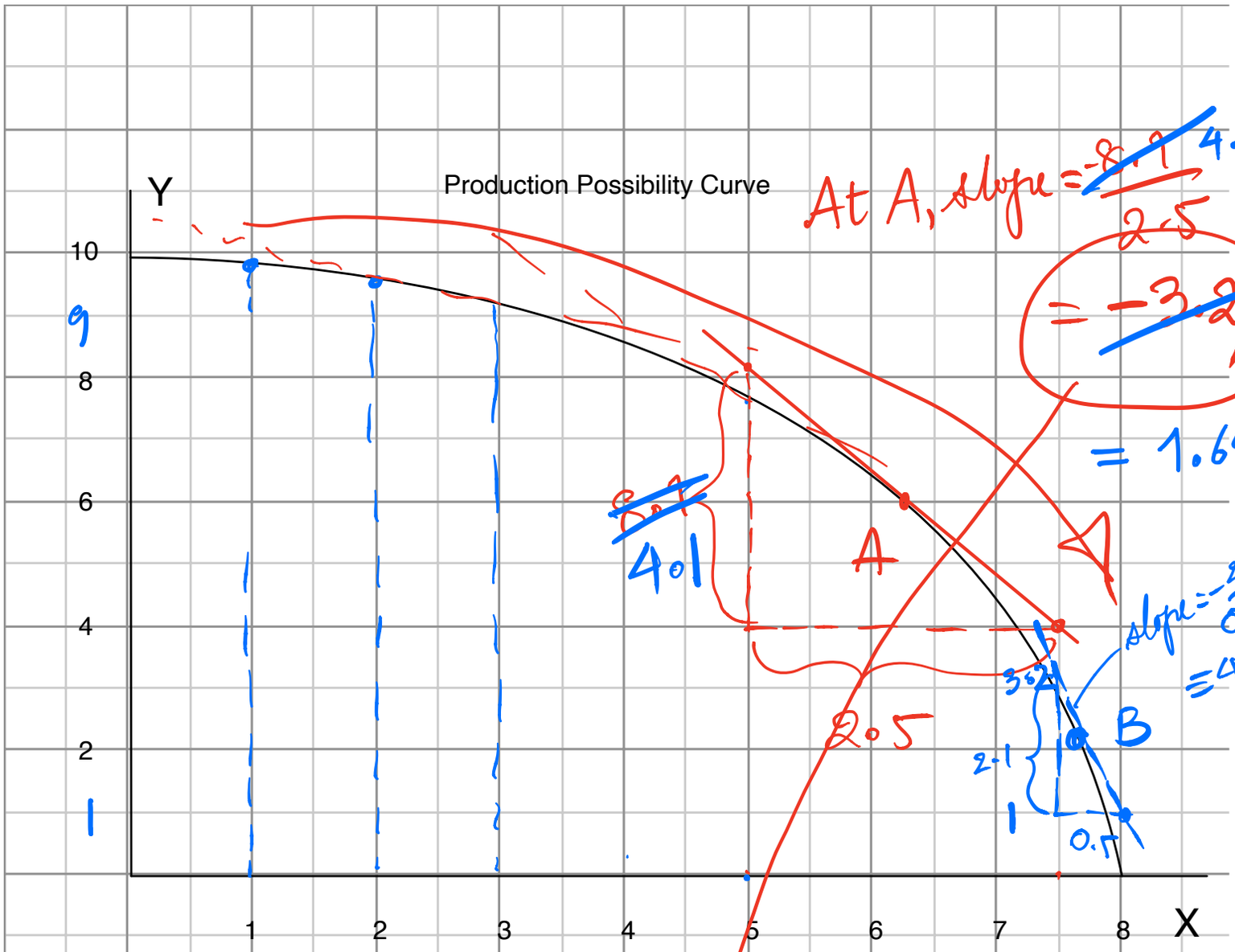

Production Possibility Curve
Y
10
8
6
4
2
1
1
2
3
4
5
6
7
8
X
X
Y
8
0
0.8
7.2
1
0.8
6.4
2

6) Each additional unit of y
$\Rightarrow$ 0.8 unit less of x.

opp. cost/unit of y = 0.8 unit of x.

$= -\frac{1}{\text{slope}}$ (with x as horizontal axis.

7) Linear PPC $\Rightarrow$ Constant opp cost.
called Constant cost PPC.



X	Y	
0	10	0.1
1	9.9	0.3
2	9.6	0.4
3	9.2	0.5
4	8.7	1
5	7.7	

At A, the opp cost of X/unit = 1.64 unit of Y

At A, the opp cost of Y/unit = $\frac{1}{1.64}$ = 0.609 unit of X

At A, if we want more of $X = \Delta X = 0.1$

we have to sacrifice $\Delta Y \approx -1.64 \Delta X$

$= -1.64(.1)$

$= -0.164.$

At A, if we want more of $Y = \Delta Y = 0.2$

we have to sacrifice $\Delta X \approx$

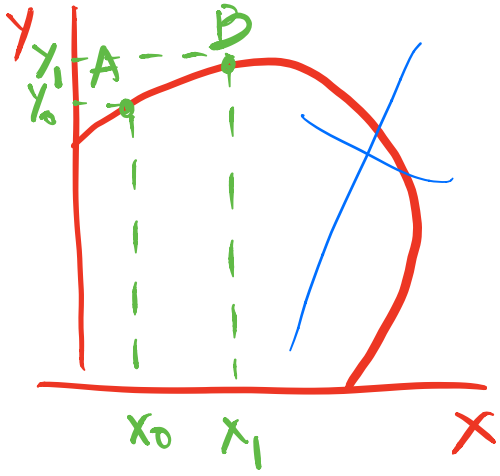
$.0617 = \frac{0.2}{1.641}$

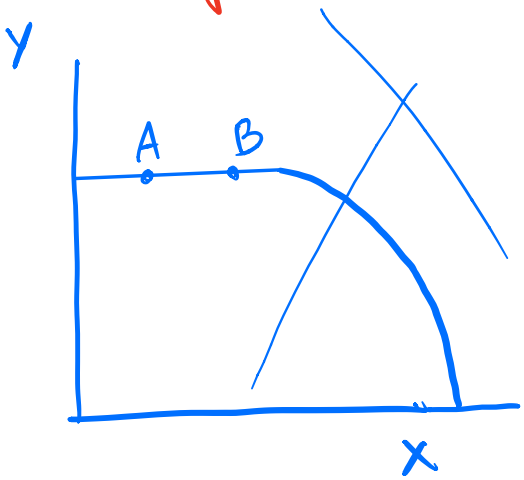
$= ?$

The PPC shows that the opp of X is increasing as we increase X from 0 to 8.

	Cost of X/unit	Cost of Y/unit
A	1.64	$\frac{1}{1.64} = 0.609$
B	4.4	$\frac{1}{4.4} = 0.227$

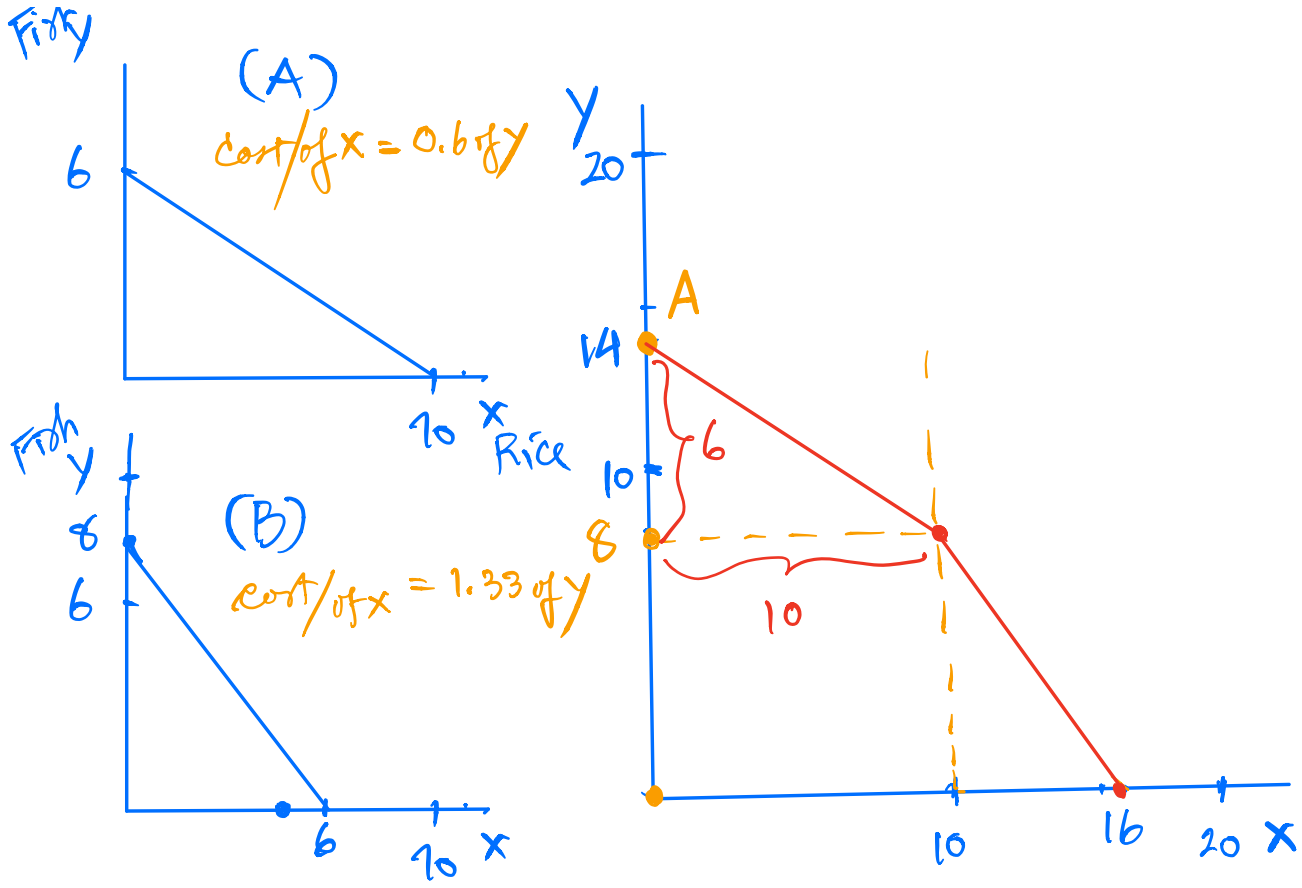
• Can PPC has positive slope ?





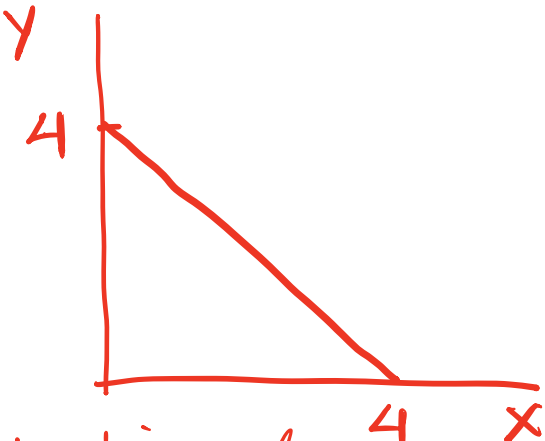
- Decreasing Cost PPC does not make economic sense.
- We can demonstrate by the following example that PPC will be mostly increasing cost.

Assume we have 2 farmers who produce X = Rice, Y = fish.



X	Y
0	14
1	13.4
2	12.8
⋮	⋮
10	8
11	6.67
12	5.33
⋮	⋮
16	0

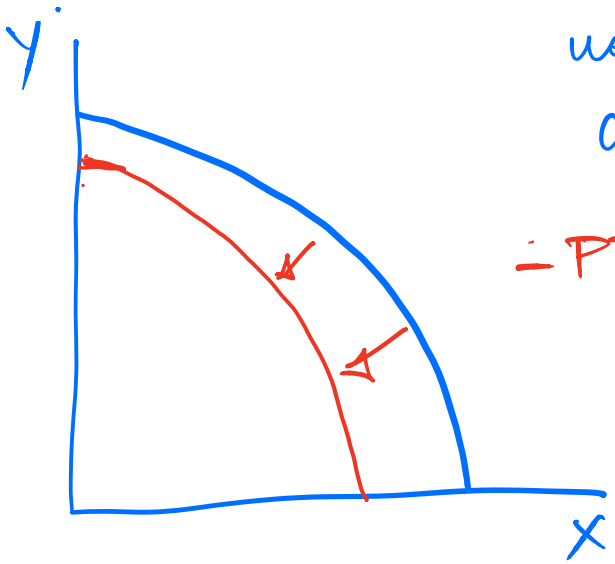
H.W. Farmer C



Combine these 3 farmers and draw the PPC.

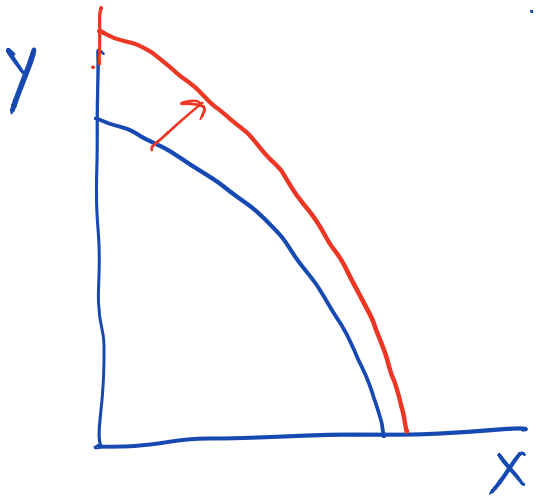
Change in PPC

- a given PPC is based on the amount of resources used most efficiently at best tech available.

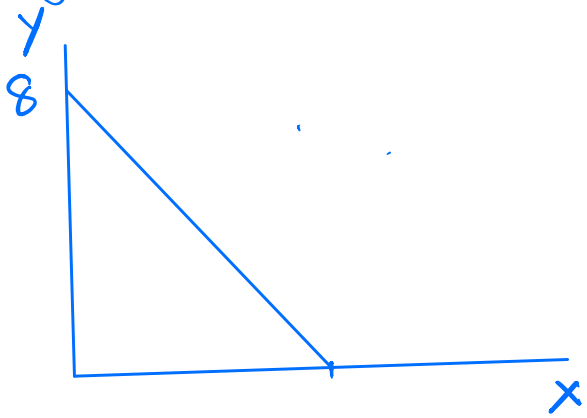


∴ PPC shifts inward due to COVID-19.

Better technology.



H.W. If the technology of producing X improves so much that the amount of X we can have doubles at all quantities of Y. How will the PPC below change?



Cost of X is higher?

Cost of Y is higher?

H.W. Due Sept 1.