EE211 Principles of Microeconomics **Section 1** Weerawat Phattarasukkumjorn
Assignment 1
Assigned on Sep 7th, 2021. To be submitted on Sep 14th, 2021 before midnight.

Instructions

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(1) Please read the instruction carefully. Also take this habit with you into the exam room.
(2) Please read each question carefully and answer the questions straightforwardly. Always provide economic reasons at lease a paragraph for your analysis, or a graph when necessary, even when the question does not indicate so.
(3) Handing and submitting assignments are only available via BE Moodle.

Answering the questions and preparing answer sheets

(1) Answers are to be handwritten, in either digital or analog form, in a blank canvas or any clean paper. Make sure that your handwriting is clearly visible and readable.
(2) There is no need to rewrite the question. Just indicate the question number clearly for each of the answer, such as 1.a).
(3) When done, for the digital case, collage all the pages into a single PDF file. For those who write on sheets of paper, take photo of all pages then convert all of them into a single PDF file as well.
(4) Name your PDF file as StudentID_YourNickname, such as 640123456_Bo.

Submitting your answers

(1) Make sure your file does not exceed 10MB. This is the maximum file size for BE Moodle upload.
(2) Login to BE Moodle, head into the course, then the assignment topic.
(3) Choose your file to submit. Done. There will be timestamp for your upload date and time, so please make sure to not submit later than that.

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1. A human civilization finds a new wood source of total 120 units. Wood can either be used to produce spear or bow for hunting. A wood master then calculates that in order to produce a spear, it takes 4 units of wood while 3 units for a bow. Answer the following questions.

1.a) Assumed that the opportunity cost of using this 120 units of wood to produce the products is constant, draw a production possibility curve (PPC), displaying quantity of spear on the vertical axis and quantity of bow on the horizontal axis, and indicate all the essential details in the graph and explain.

1.b) How much is the opportunity cost for a spear, in terms of bow? Show how you calculate this figure.

1.c) With this newly found resource, is it possible for this civilization to produce 20 spears and 12 bows? If it is, is this option efficient? Display this option on a graph from (a) and explain.

1.d) If a new method of making bow is discovered and requires only 1.5 units of wood for each bow, how does it affect the PPC and the opportunity cost for a spear? Illustrate the change and explain.

2. Assumed that a computer devices market is perfectly competitive, answer the following questions in detail.

2.a) Draw a graph showing that the computer devices market is in equilibrium at a certain original equilibrium price P_0 and equilibrium quantity Q_0 During the pandemic, many people are assigned to work from home and computer devices are crucial. Does the market demand or market supply of computer devices change? Explain.

2.b) After what happened in 2.a), at the original equilibrium price P_0 will there be excess demand or excess supply? Show the new market equilibrium and state the equilibrium condition. Does the pandemic cause the equilibrium price and quantity to increase or decrease?

2.c) From the situation in 2.b), compare the consumer surplus and producer surplus in this computer market before and during the pandemic.

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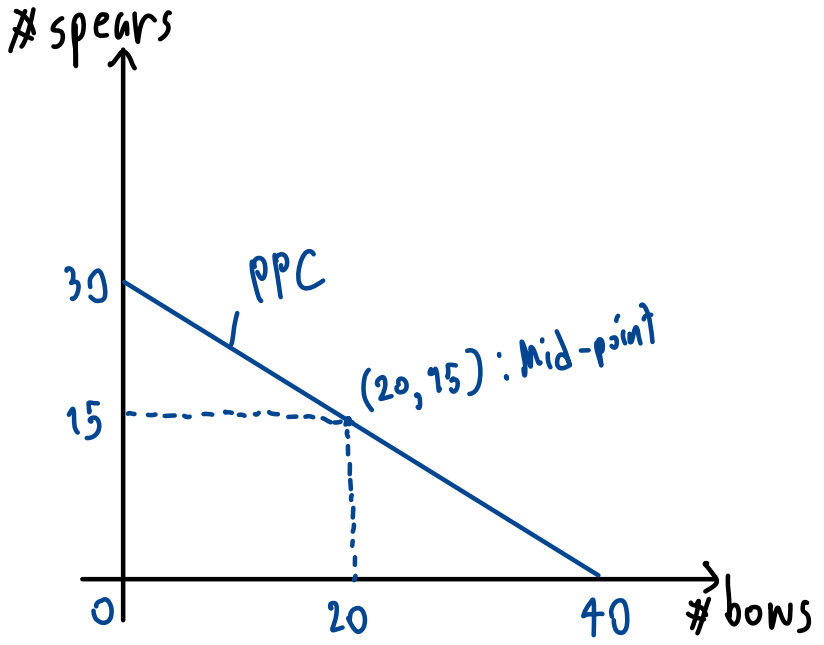
3. Consider a System-on-a-Chip (SoC) market that is assumed to be perfectly competitive, due to a technical problem of production, there are only a few factories that can produce the next generation SoC. Answer the following questions in detail.

3.a) Draw a demand and supply on graph when the demand has normal downward slope while the supply is perfectly inelastic. The equilibrium price is at $50 and the equilibrium quantity is at 5,000 units a day.

3.b) With the situation in 3.a), a study reveals that when the price drops to $40, there will be 500 units of excess demand. Calculate the price elasticity of demand and supply **at the equilibrium**.

3.c) With the situation in 3.a), if a unit tax is imposed on buyers for $10, portray the result of this intervention including the new equilibrium price and quantity, deadweight loss, and tax burden. Also, indicate which part of the burden belongs the either the buyers or the sellers.

① 1.a)



In total 120 units of wood can be produced either

- spear: $\frac{120}{4}$ = 30 units

or

- bow: $\frac{120}{3}$ = 40 units

Mid-point: spear = 15 units

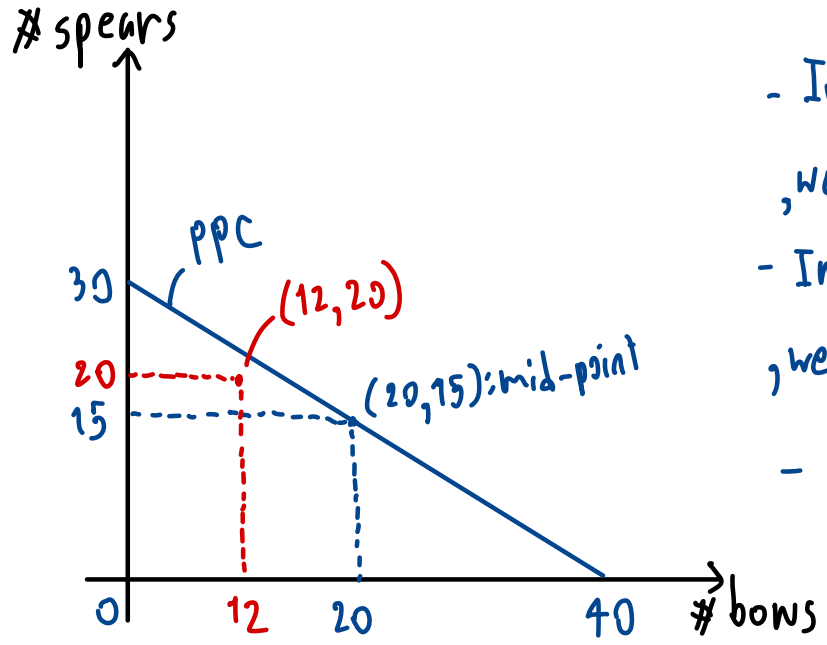
bow = 20 units

1.b) The opportunity cost for each spear (in terms of bow)

$\therefore$ 30 spears = 40 bows

1 spears = $\frac{1 \times 40}{30}$ = $\frac{4}{3}$ = 1.3 bows

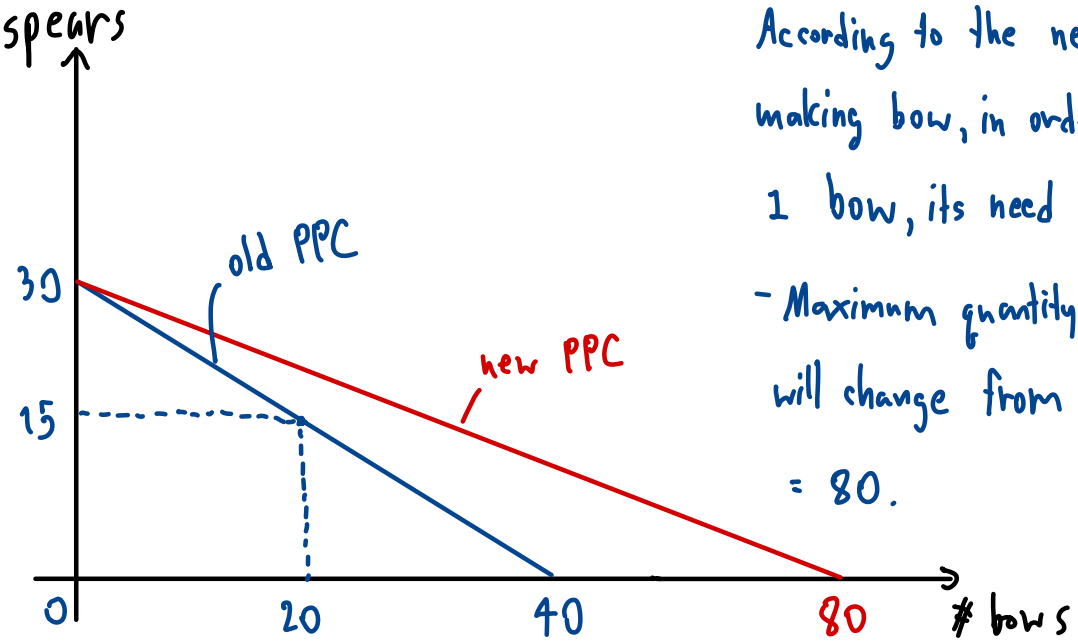
1.c)



- In order to produce 20 spears, we need 20×4 = 80 woods
- In order to produce 12 bows, we need 12×3 = 36 woods
- Total woods needed is 80+36 = 116 units

$\therefore$ According to the graph, it is possible to produce 20 spears and 12 bows because the point is below the PPC line. Also, there will be left resources.

1.d)



According to the new method of making bow, in order to produce 1 bow, its need 1.5 woods

- Maximum quantity of bows will change from 40 to $\frac{120}{1.5}$ = 80.

- Opportunity cost of each spear (in terms of bow)

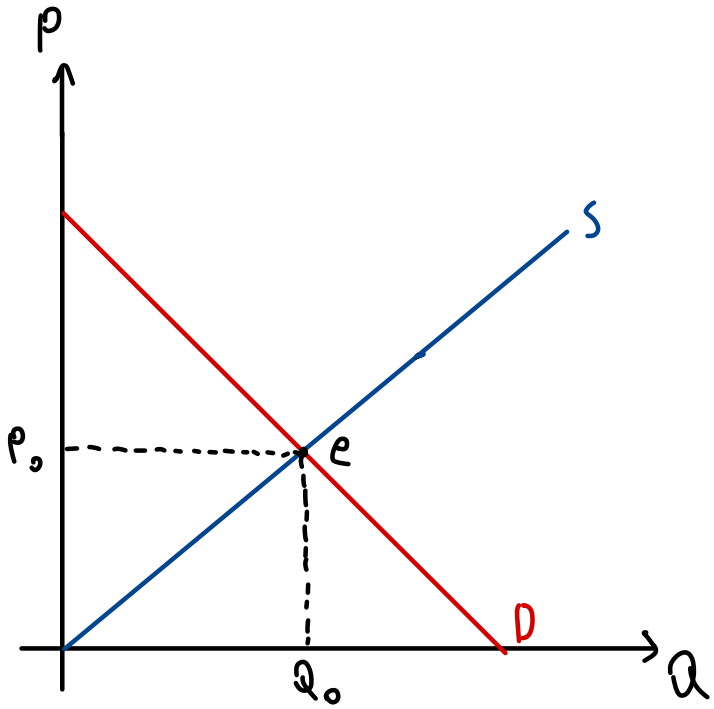
30 spears = 80 bows

1 spear = $\frac{1 \times 80}{30}$ = 2.6 bows

∴ According to the graph, the new PPC is changed due to the rising maximum quantity of bows.

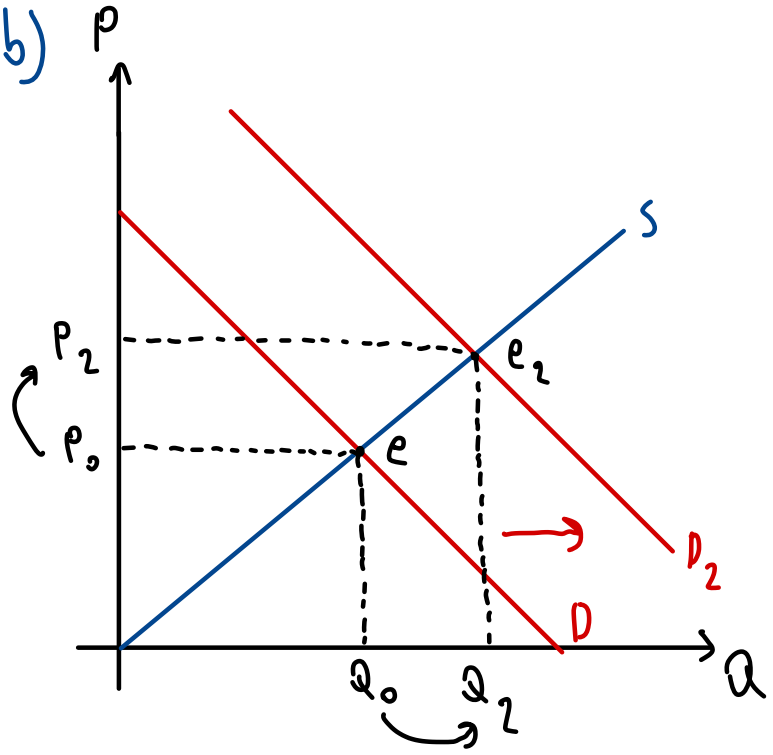
Also, the opportunity cost of each spear will increase from 1.3 to 2.6 bows.

② 2.a)



- Due to the pandemic, both the market demand and the market supply will increase because people needs more computer to work from home and the supplier will increases their production lines in order to response people's need.

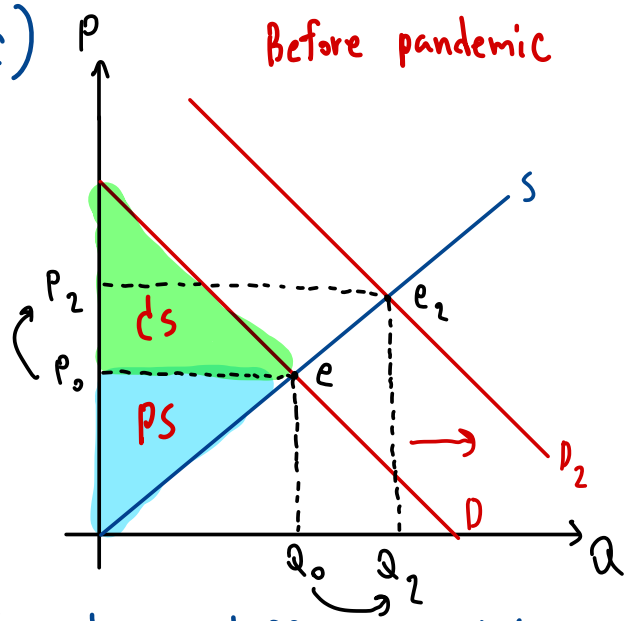
2.b)

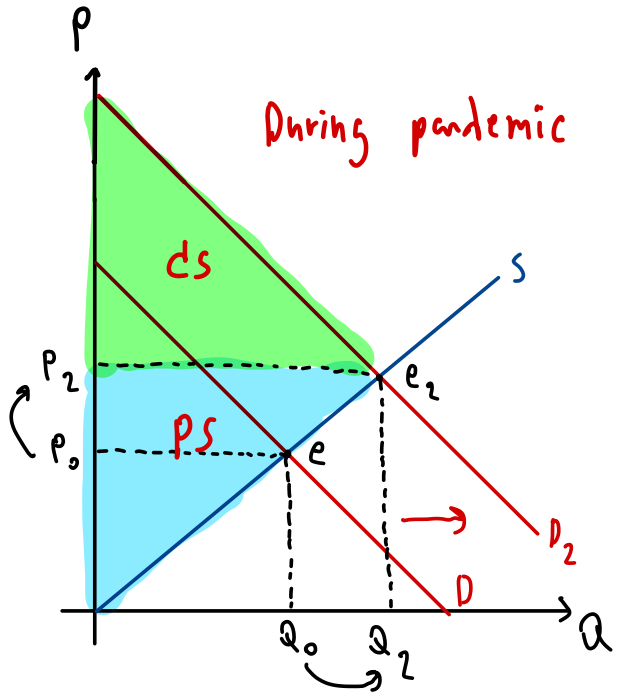


- The graph can show that in order to have the new equilibrium, the demand is shifted to the right due to working from home. Also, the supply increases due to the price and the need. Therefore, the equilibrium increases by the effection of pandemic.

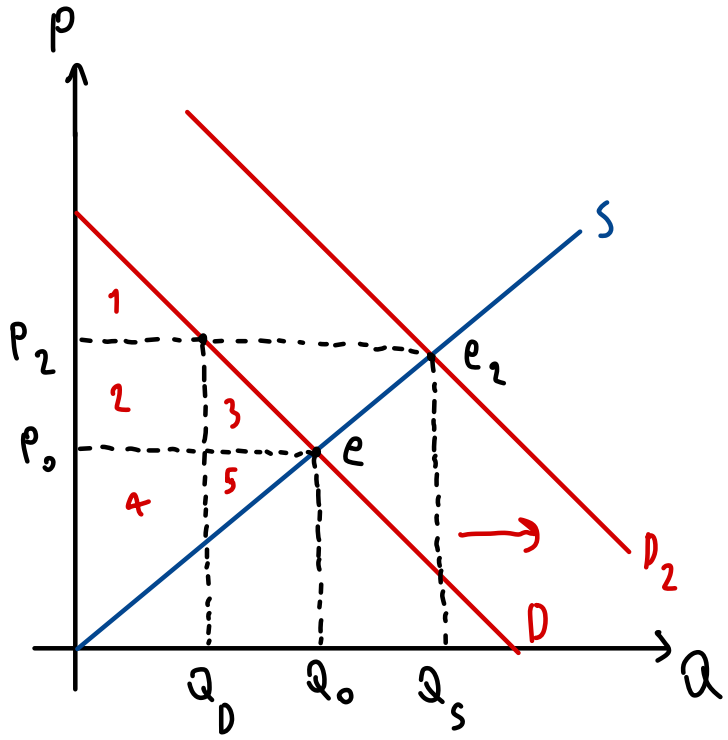
- According to the graph, there will be no excess demand or excess supply because the quantity of both demand and supply are moving along.

2.c)





The obvious difference between these two graphs is that both the consumer surplus and the producer surplus during the pandemic are a lot larger compares to before the pandemic.



Consumer Surplus

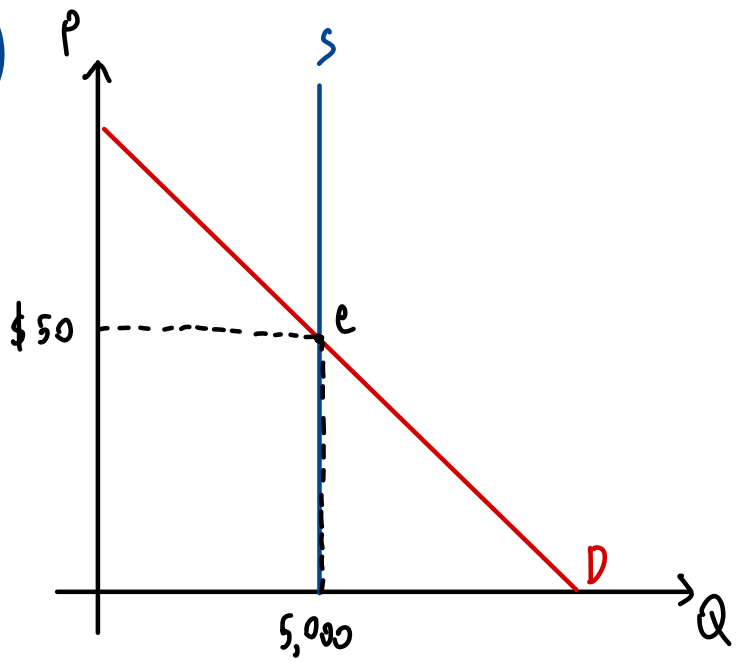
- Before: 1, 2, 3 After: 1

Producer Surplus

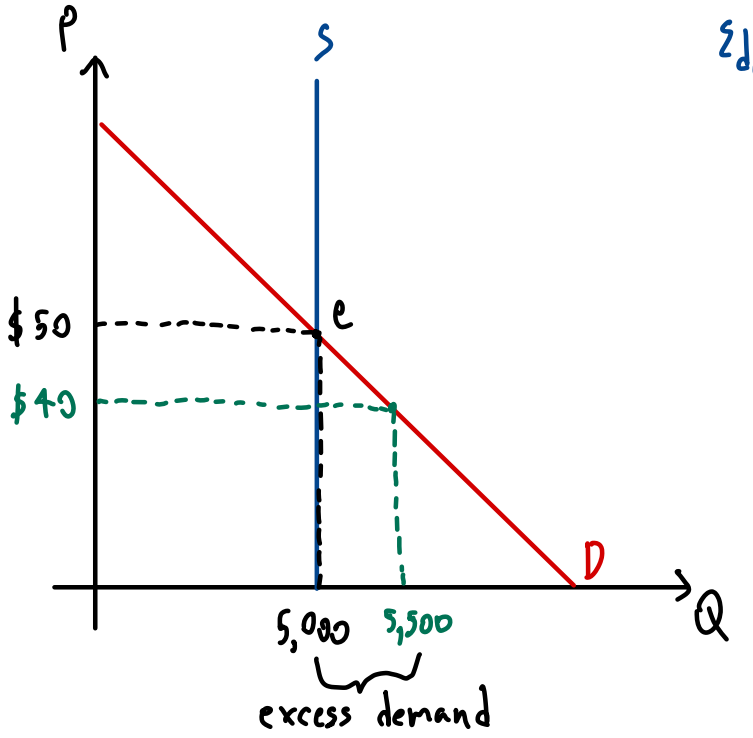
- Before: 4, 5 After: 2, 4

∴ Due to the new price (P_2), the consumer surplus loses #2 to the producer surplus and #3 is the DWL. However, the producer surplus gains #2 from CS but PS loses #5 for DWL.

(3) 3.a)



3.b)



$$\varepsilon_{d(e)} = \frac{P}{Q} \cdot \frac{\Delta Q}{\Delta P} = \left(\frac{50}{5000}\right) \cdot \left(\frac{5500 - 5000}{40 - 50}\right)$$

$$= \left(\frac{1}{100}\right)\left(\frac{500}{-10}\right)$$

$$= -\frac{50}{100}$$

$$\therefore \varepsilon_{d(e)} = -\frac{1}{2}$$

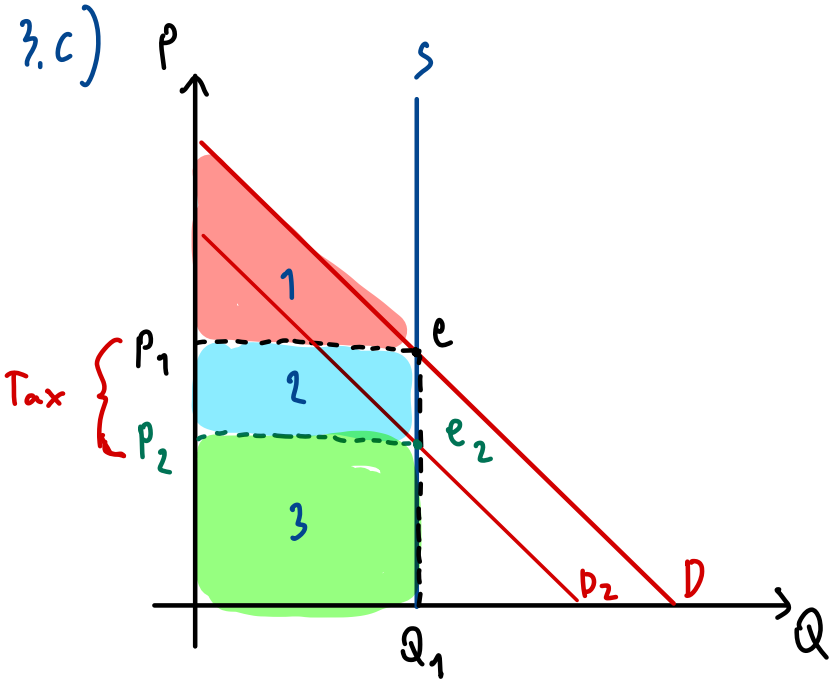
$$\varepsilon_{s(e)} = \frac{P}{Q} \cdot \frac{\Delta Q}{\Delta P} = \left(\frac{50}{5000}\right) \cdot \left(\frac{-50}{1}\right)$$

$$= \left(\frac{1}{100}\right)(-50)$$

$$\therefore \varepsilon_{s(e)} = -\frac{1}{2}$$

$\therefore$ At equilibrium point: $\varepsilon_d = \varepsilon_s = -\frac{1}{2}$ #

3.c)



- An increase in price, leaves the quantity supplied unchanged.
- There is no deadweight loss in this case.
- All taxburden belong to sellers.