

Demand vs Demand quantity

We tell them apart when talking about a change in either thing. This is a direct quote from the professor:

A change in quantity demanded happens when the price of the good changes (e.g., the price of your favorite drink increases, so you buy fewer of those drinks).

A change in demand happens when something other than the price of the good changes, such as your income, tastes & preferences, income, wealth, the prices of related products, expectations about future prices, income, wealth, etc. (e.g., new science paper shows your favorite drink makes you smarter, extends your lifespan).

I tend to think of Supply and Demand as the entire curves, while quantity is just a number (like 5 apples, 10 phones, etc.)

How do I know what is changing? Demand, Demand quantity, Supply, or Supply quantity?

Step 1. Determine if it is a change in price of the good in question or not.

For example:

Price change:

“If the price for fidget spinners in this market is \$2.25”. (From Q2(3))

“The government imposes a price ceiling of \$5 per haircut” (From Q3(3))

“The price of the service itself changes”. (From Q4(4))

Other changes:

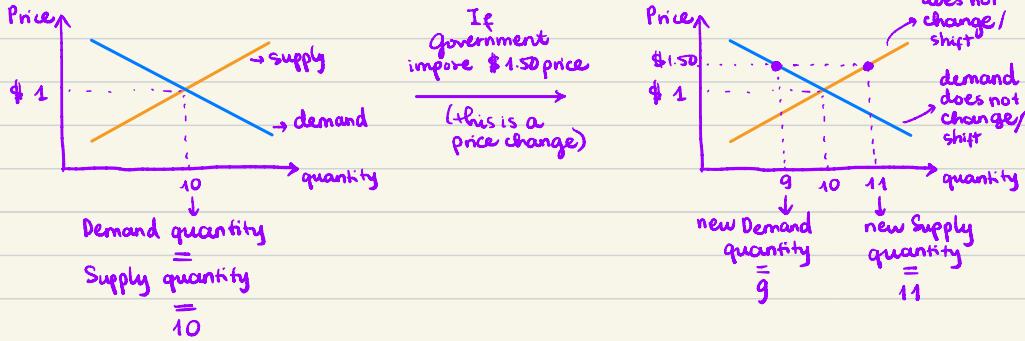
“The price of a close substitute increases”. (From Q4(5))

-> a change in price of other goods, not the good in question

“Apple discovers a new production technology”. (From Q1(3))

Step 2: If it is a price change of the good in question: we don't shift things.

Demand & Supply do not change, but quantities do. Example:



In this case, Demand (curve) and Supply (curve) do not change/shift.

However, Demand quantity and Supply quantity changes.

Step 3. If it is other changes: we shift things. But how do we shift them?

Step 3.1. Is the change directly impacting producers/suppliers, or is it directly impacting consumers/buyers?

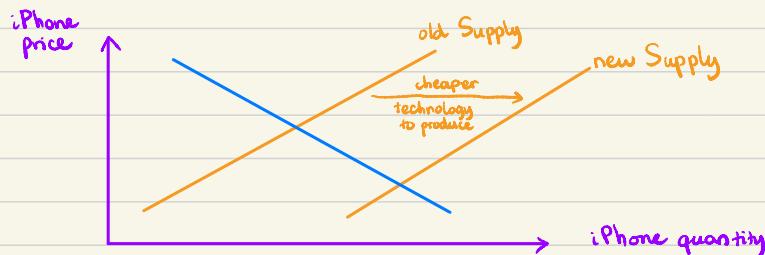
For example, Apply discovering new technology is a change directly impacting suppliers. A rising interest in using iPhone is a change directly impacting buyers.

If the changes are directly impacting buyers, we shift Demand (curve)

If the changes are directly impacting suppliers, shift Supply (curve)

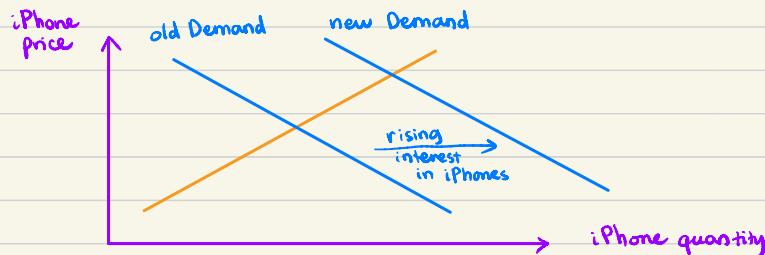
Step 3.2. What is the direction of the shift?

If the change makes suppliers want to supply more, Supply shifts to the right, and vice versa. For example:



In this case, Supply changes/shifts. Demand stays the same.

If the change makes buyers want more, Demand shifts to the right, and vice versa. For example:



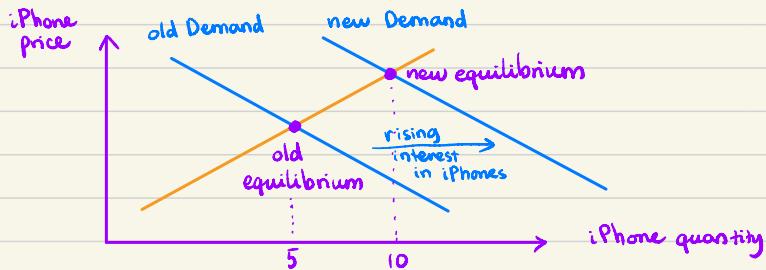
In this case, Demand changes/shifts. Supply stays the same.

Step 4: Find and compare equilibria.

Find where the old Demand and Supply intersects: that is your old equilibrium.

Find where the new Demand and Supply intersects: that is your new equilibrium.

Now compare the two points: If you see the new equilibrium has a higher quantity, it means both Demand quantity and Supply quantity increased, and vice versa. For example:



In this case, Quantity increases from 5 to 10. You can refer to it as Demand quantity increases and Supply quantity increases, as Demand quantity and Supply quantity are the same in equilibrium.

Discussion - Wed Sep 13th

Misc

- Exam coming up !! (Accommodation: emailed & proctored by Prof)
- How to study: Review slides + HW + Discussion Questions
- Midpoint vs point formulae: will be clear on exam
- Exam: Attendance + Camera on until you hit submit + Chat disabled
 - + Auto submission at 9:55 + No info from me (please use best judgement)
 - + Emergency text available when you open exam + Grades before weekend

Review

Chs 1 Ten principles

Chs 2 Production Possibility Frontier

- How to draw one from given table / ability ("points")

Opportunity cost

- Interpretation ("slope", "MRT", vs "trade off")

- Identify opportunity cost from PPF (between 2 points)

Chs 3 Absolute advantage

- If it's taking me less time / effort / input costs / etc. to do it, then I have A.A.

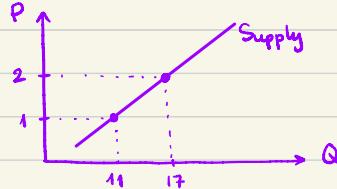
Comparative advantage: refers to alternative activities

- If I'm giving up less of other alternative activity to do it, then I have C.A. (fish vs coconuts)

Chs 4 Demand vs Supply

- How to draw them from table / function

e.g. $Q^S = 5 + 6P$ is a supply function



Demand vs Demand quantity, Supply vs Supply quantity

Price change → Movement along the curve & Quantity changes

Other changes → Shifting / Changing Demand vs Quantity

Excess demand (demand quantity > supply quantity): Shortage

Excess supply (supply quantity > demand quantity): Surplus

Chs 5 Interpretation of elasticity: response in demand quantity to changes in price/income
Individual vs Market demand

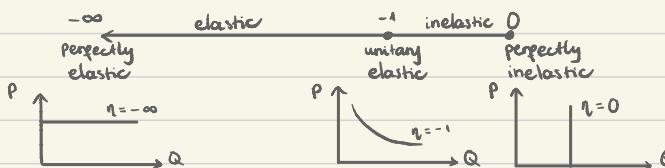
Types of elasticities:

1) Point Price Elasticity of Demand

$$= \frac{\% \Delta Q_0}{\% \Delta P} = \frac{\frac{\text{new } Q_0 - \text{old } Q_0}{\text{old } Q_0}}{\frac{\text{new } P - \text{old } P}{\text{old } P}}$$

Midpoint Price Elasticity of Demand

$$= \frac{\% \Delta Q_0}{\% \Delta P} = \frac{\frac{\text{new } Q_0 - \text{old } Q_0}{(\text{new } Q_0 + \text{old } Q_0)/2}}{\frac{\text{new } P - \text{old } P}{(\text{new } P + \text{old } P)/2}}$$



Sign matters!

What's the difference between "Point" and "Midpoint"?

Look at the highlighted areas

in pink: We divide by a point: "old Q_0 " and "old P "

in yellow: We divide by a midpoint:

$(\text{new } Q_0 + \text{old } Q_0)/2$ is a midpoint between new Q_0 & old Q_0

$(\text{new } P + \text{old } P)/2$ is a midpoint between new P & old P

2) Point Income Elasticity of Demand

$$= \frac{\% \Delta Q_0}{\% \Delta I} = \frac{\frac{\text{new } Q_0 - \text{old } Q_0}{\text{old } Q_0}}{\frac{\text{new } I - \text{old } I}{\text{old } I}}$$

this is a point

Midpoint Income Elasticity of Demand

$$= \frac{\% \Delta Q_0}{\% \Delta I} = \frac{\frac{\text{new } Q_0 - \text{old } Q_0}{(\text{new } Q_0 + \text{old } Q_0)/2}}{\frac{\text{new } I - \text{old } I}{(\text{new } I + \text{old } I)/2}}$$

this is a midpoint

3) Point Cross-Price Elasticity of Demand

$$= \frac{\% \Delta Q_0^x}{\% \Delta P_Y} = \frac{\frac{\text{new } Q_0^x - \text{old } Q_0^x}{\text{old } Q_0^x}}{\frac{\text{new } P^Y - \text{old } P^Y}{\text{old } P^Y}}$$

Midpoint Cross-Price Elasticity of Demand

$$= \frac{\% \Delta Q_0^x}{\% \Delta P_Y} = \frac{\frac{\text{new } Q_0^x - \text{old } Q_0^x}{(\text{new } Q_0^x + \text{old } Q_0^x)/2}}{\frac{\text{new } P^Y - \text{old } P^Y}{(\text{new } P^Y + \text{old } P^Y)/2}}$$

← complements 0 substitute →

Practice questions for Chs 5 : Discussion: "Elasticity of Demand"

Chs 6 Price ceiling vs Price floor

(if price change → move along curve)

Tax on suppliers vs Tax on consumers (draw additional S or D curve)

Burden of tax

→ Compare new price of consumer vs old price
new price for supplier vs old price

See Q5 in this note for an example.

Discussion - Wed Sept 20

Misc + Note for next exam

- Full name on Zoom
- Login on the correct Zoom section
- + About this exam
 - Grades, correct answers, etc.

Q&A

1. Tax-related questions
2. Elasticity vs Revenue

(next page)

1. How to solve a "Tax" type of question from a given graph?

S1: Is it a tax on Consumers or Suppliers?

It should be given on the question, but if no info is provided:

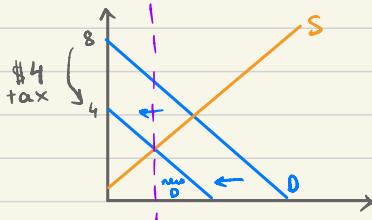
If the question asks about "burden", then it doesn't matter!

So we simply assume tax on either Consumers or Suppliers

S2: After assuming, we'll need to draw on our graph. Note that a tax is not a price change, so we'll shift some curves. Examples:

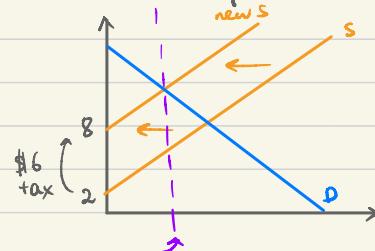
e.g.: \$4 tax on Consumers

In this case, we shift Demand to the left since a consumer tax is a negative change on consumers
Note that we shift it by the tax amount of \$4



\$6 tax on Producers

In this case, we shift Supply to the left, since a supplier tax is a negative change to suppliers
Note that we shift it by the tax amount of \$6

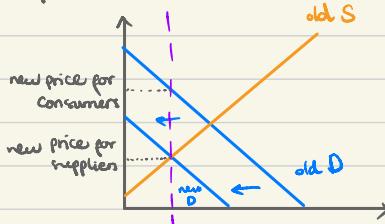


S3: (new!) Draw a vertical line from the new equilibrium

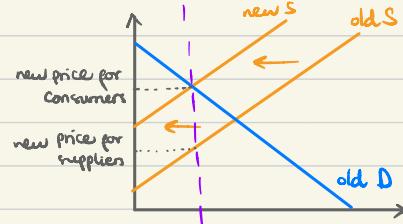
S4: To determine burden, we need 3 pieces of information:

- + Old price : determine by the old equilibrium
- + New price for Consumers : where Vertical line intersects old Demand
- + New price for Producers : where Vertical line intersects old Supply

Example: \$4 tax on Consumers



\$6 tax on Producers

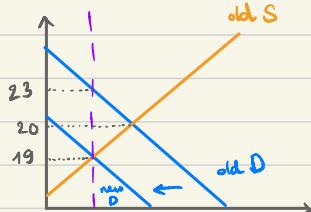


S5: Calculating the burden

Burden for consumers = New price for consumers - Old price

Burden for suppliers = Old price - New price for suppliers

Example: \$4 tax on Consumers

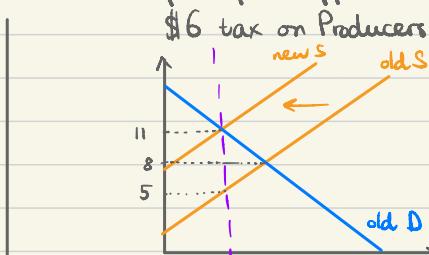


Old price = 20

New price for consumers = 23

New price for suppliers = 19

$$\Rightarrow \begin{cases} \text{Consumer burden} = 23 - 20 = 3 \\ \text{Supplier burden} = 20 - 19 = 1 \end{cases}$$



Old price = 8

New price for consumers = 11

New price for suppliers = 5

$$\Rightarrow \begin{cases} \text{Consumer burden} = 11 - 8 = 3 \\ \text{Supplier burden} = 8 - 5 = 3 \end{cases}$$

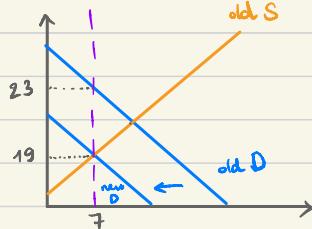
(An interesting note: If you add the burdens together, you'll get exactly the tax amount!)

S6: If asked about tax revenue:

Determine new quantity at the new equilibrium.

Government's tax revenue = Tax amount × New Quantity

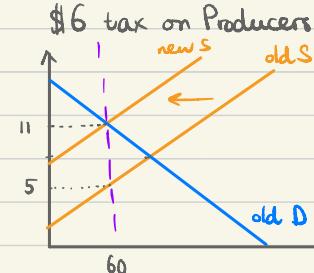
Example: \$4 tax on Consumers



$$\text{Tax revenue} = \$4 \times 7 = \$28$$

$$\text{Tax revenue} = \$6 \times 60 = \$360$$

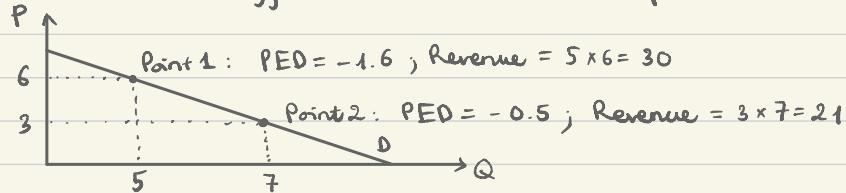
Intuition: After a tax, the market reaches a new equilibrium and so a new Quantity sold. Since the gov is collecting some tax per unit, their tax revenue should be tax times quantity sold.



2. Revenue vs Price Elasticity of Demand (PED)

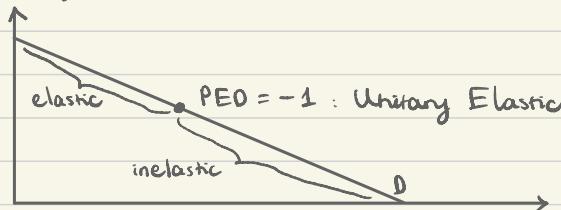
From PED, we can infer information about revenue!

We know from class that on a Demand curve, there are different revenues and different PED. For example:



Point 1 and Point 2 have different PED and Revenue.

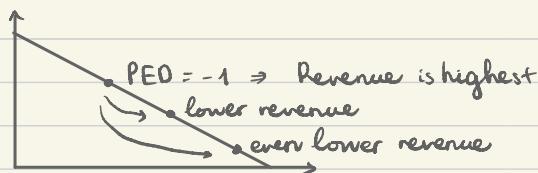
Now, we know from class, there is 1 point on Demand where PED is unitary elastic ($\text{PED} = -1$).



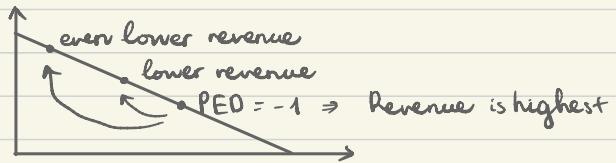
Interestingly, that is also the point where Revenue is maximized!

The further away from that point (on each side), the lower revenue becomes!

Example 1:



Example 2:



Note: $\text{PED} = -1$ point is not the same as equilibrium point

Discussion 5 - Wed Sep 27

Misc Where to practice for next exam?

- + Mock prelim
- + Discussion Qs
- + Study it / Problems & Application
on Cengage

Chapter 07: Consumers, Producers, and the Efficiency of Markets

Chapter 07 Read It: Consumers, Producers, and the Efficiency of Markets

This chapter will teach you about welfare economics—the study of how the allocation of resources affects economic efficiency.

View 3 activities

Learn It

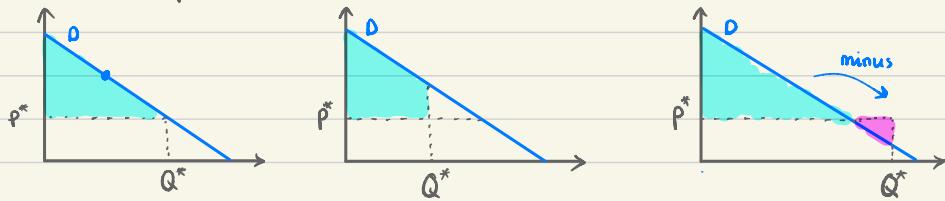
Study It

Chapter 07 Problems & Applications

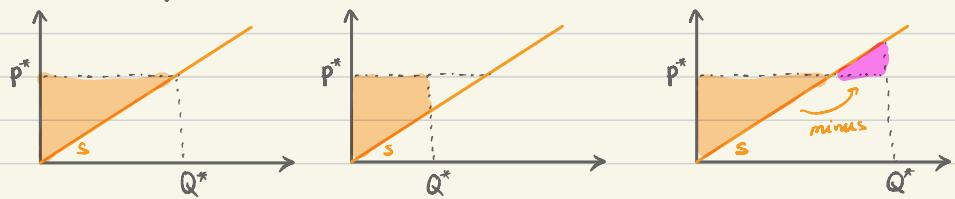
PrACTICE

This set of mobile-enabled problems is an algorithmic version of the Problems & Applications.

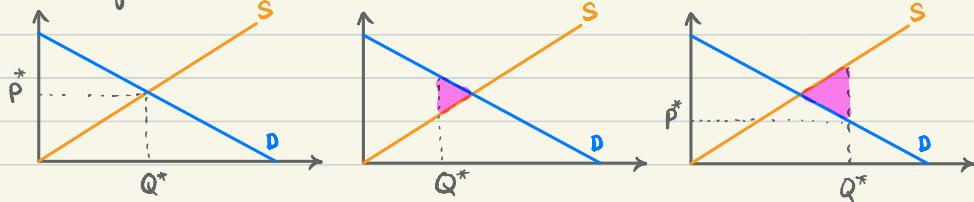
Review - Consumer surplus :



+ Producer surplus :



+ Deadweight loss



$$DWL = 0$$

$$DWL = \text{pink triangle}$$

$$DWL = \text{pink triangle}$$

+ Budget constraint (think back to PPF)

+ Utility (unit: utils)

Total utility vs. Marginal utility

+ Law of diminishing marginal utility

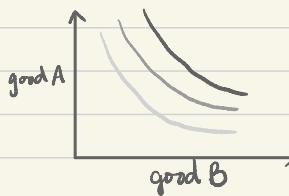
Tax ~ graph question (group 2)

Elasticity graph question (group 2)

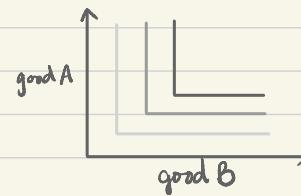
Discussion 6 - Wed, Oct 4th

- Misc
- + Upcoming prelim
 - + No OH during break

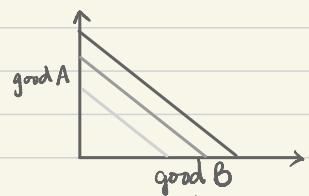
Review 1. Indifference curve:



(here, Darker ~ More preferred)



Perfect complement



Perfect substitute

At optimum: $MRS = \frac{P_B}{P_A}$



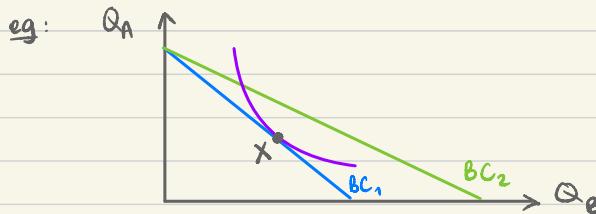
2. Income & Substitution effects

Determine the effect on graph

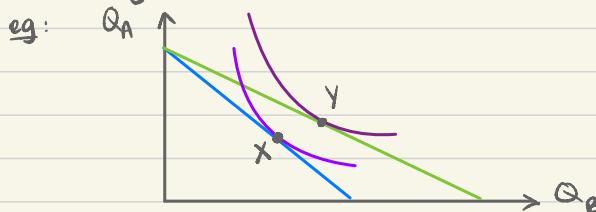
Step 1: Identify initial budget (BC_1) vs later budget (BC_2)



Step 2: Identify where the initial optimum and its indifference curve is. Call this point X (it'll be called differently in hw/exam, so be careful)

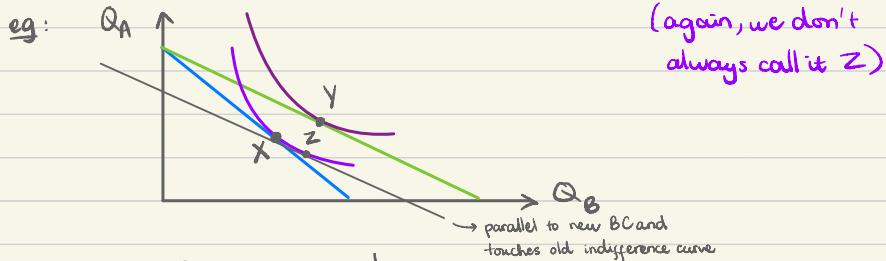


Step 3: Identify the new optimum for BC_2 . Call it Y (again, will be called differently in other places)



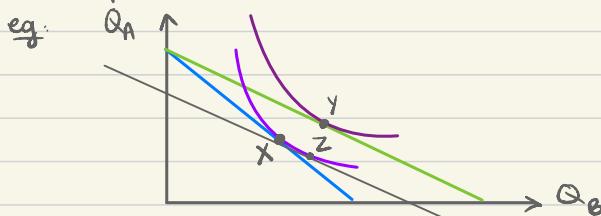
Step 4: On the initial indifference curve that touches BC_1 , draw a line parallel to BC_2 .

Call the point where it touches the initial indifference curve Z .



Step 5: Know the difference!

(a) Total effect:

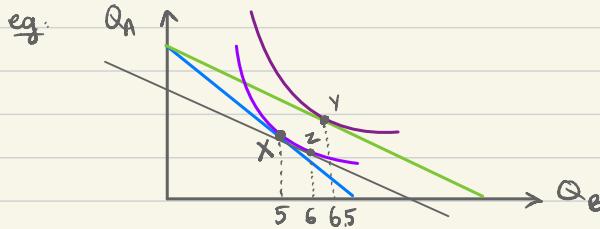


$X \rightarrow Y$ is total change, $X \rightarrow Z$ is subs. effect, $Z \rightarrow Y$ is inc. effect

(b) Effect on B

Horizontal differences are effects on good B.

e.g.



Total change in quantity of good B is $5 \rightarrow 6.5$ (1.5 units)

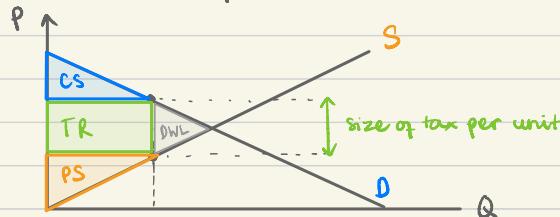
Substitution effect on Q_B is $5 \rightarrow 6$

Income effect on Q_B is $6 \rightarrow 6.5$

(c) Effect on A

Vertical differences are effects on good A

3. Tax, DWL, & surplus



$$\text{Total surplus} = CS + PS + \text{Tax revenue}$$

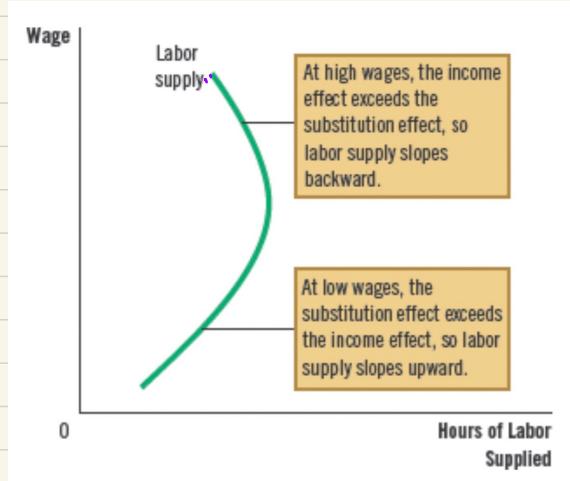
4. DWL vs elasticity

More inelastic D / S \rightarrow smaller DWL

Recall from TA note



5. Wage vs labor



(Graph from Chap. 22, Mankiw)