

# Government Intervention

Section 1.3

# Learning Objectives

## Indirect taxes

Specific (fixed amount) taxes and *ad valorem* (percentage) taxes and their impact on markets

- Explain why governments impose indirect (excise) taxes.
- Distinguish between specific and *ad valorem* taxes.
- Draw diagrams to show specific and *ad valorem* taxes, and analyse their impacts on market outcomes.
- Discuss the consequences of imposing an indirect tax on the stakeholders in a market, including consumers, producers and the government.

# Continued...

Tax incidence and price elasticity of demand and supply  
(HL ONLY)

- Explain, using diagrams, how the incidence of indirect taxes on consumers and firms differs, depending on the price elasticity of demand and on the price elasticity of supply.
- Plot demand and supply curves for a product from linear functions and then illustrate and/or calculate the effects of the imposition of a specific tax on the market (on price, quantity, consumer expenditure, producer revenue, government revenue, consumer surplus and producer surplus).

# Continued...

## Subsidies

### Impact on markets

- Explain why governments provide subsidies, and describe examples of subsidies.
- Draw a diagram to show a subsidy, and analyse the impacts of a subsidy on market outcomes.
- Discuss the consequences of providing a subsidy on the stakeholders in a market, including consumers, producers and the government.
- Plot demand and supply curves for a product from linear functions and then illustrate and/or calculate the effects of the provision of a subsidy on the market (on price, quantity, consumer expenditure, producer revenue, government expenditure, consumer surplus and producer surplus). (HL ONLY)

# Continued...

## Price controls

Price ceilings (maximum prices): rationale, consequences and examples

- Explain why governments impose price ceilings, and describe examples of price ceilings, including food price controls and rent controls.
- Draw a diagram to show a price ceiling, and analyse the impacts of a price ceiling on market outcomes.
- Examine the possible consequences of a price ceiling, including shortages, inefficient resource allocation, welfare impacts, underground parallel markets and non-price rationing mechanisms.
- Discuss the consequences of imposing a price ceiling on the stakeholders in a market, including consumers, producers and the government.
- Calculate possible effects from the price ceiling diagram, including the resulting shortage and the change in consumer expenditure (which is equal to the change in firm revenue). (HL ONLY)

# Continued...

Price floors (minimum prices): rationale, consequences and examples

- Explain why governments impose price floors, and describe examples of price floors, including price support for agricultural products and minimum wages.
- Draw a diagram of a price floor, and analyse the impacts of a price floor on market outcomes.
- Examine the possible consequences of a price floor, including surpluses and government measures to dispose of the surpluses, inefficient resource allocation and welfare impacts.
- Discuss the consequences of imposing a price floor on the stakeholders in a market, including consumers, producers and the government.
- Calculate possible effects from the price floor diagram, including the resulting surplus, the change in consumer expenditure, the change in producer revenue, and government expenditure to purchase the surplus.

# Tok Links

- In what sense are we morally obliged to pay taxes? Is this the result of a promise that we have made ourselves? When was this promise made? (Make a distinction here between moral and legal obligations.)
- To what extent is government morally obliged to provide healthcare and welfare benefits to the unemployed?

# The Role of Government in the Market Economy



# Free market

- is one without any government control or intervention. The price and output is determined by the interactions of buyers and sellers
- **However**, not all markets are completely free.
- Governments tend to intervene often to influence several variables in markets for particular goods, such as:
  - **Indirect taxes**
    - Taxing the good to discourage consumption or raise revenues
  - **Subsidies**
    - Paying producers of the good to reduce costs or encourage the good's production:
  - **Price Ceilings**
    - Reducing the price of the good below its free market equilibrium to benefit consumers
  - **Price Floors**
    - Raising the price of a good above its free market equilibrium to benefit producers:

- *When governments intervene in the free market, the level of output and price that results is may NOT be the allocatively efficient level.*
- *In other words, government intervention may lead to a misallocation of society's resources.*

# Indirect Taxes

# Continued...

- An indirect tax is one placed by the government on the producers of a particular good.
- Consumers will pay the tax *indirectly* through producers
- An indirect tax will be shared by both consumers and producers

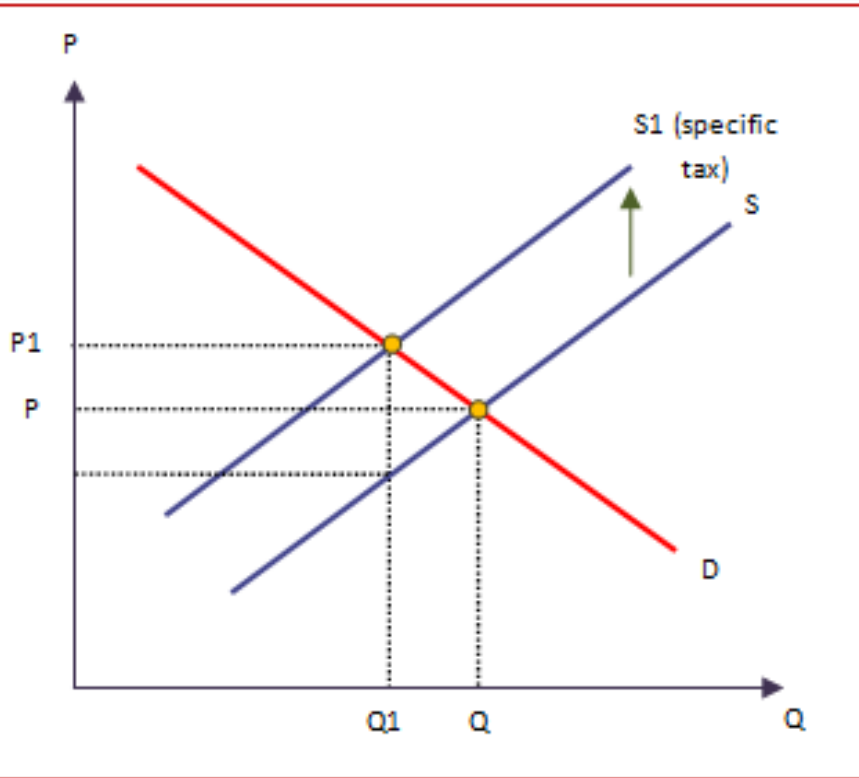
# Different types of Indirect Tax:

- Specific Tax:
  - The amount of tax is an absolute value
    - Example: \$2 per pack of cigarette
- Ad Valorem Tax:
  - The amount of tax is a % of the sale
    - Value added tax or (VAT) 19%
    - GST: 13% in Ontario

# Excise Tax/Sin Tax

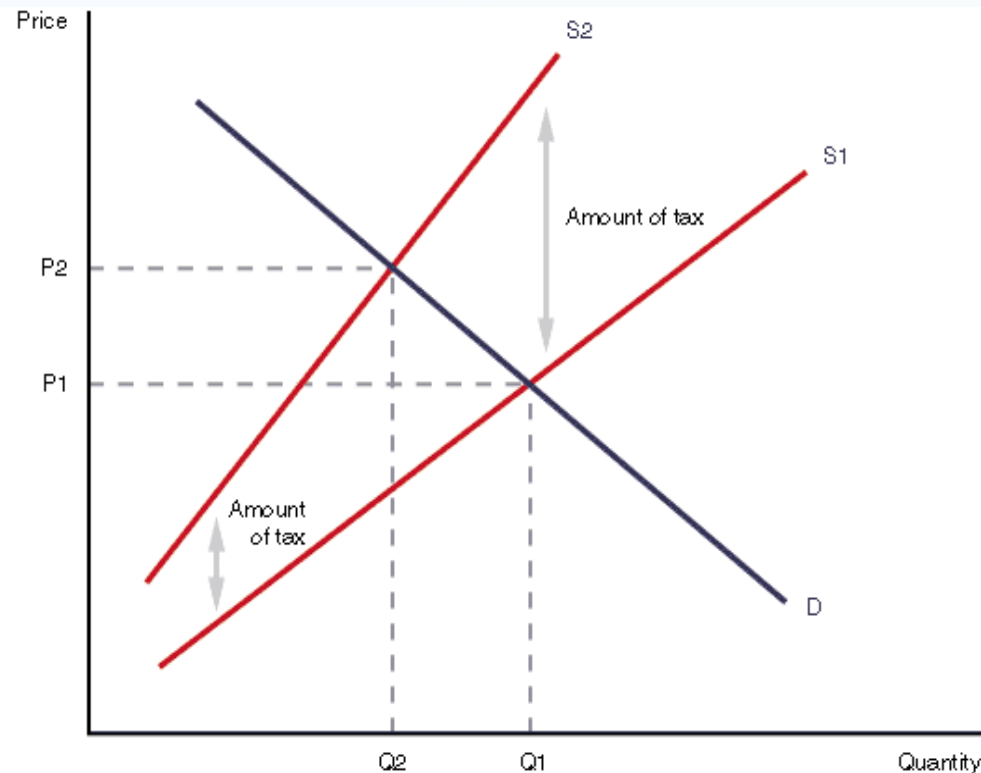
- This refers to an indirect tax placed on harmful/demerit goods such as:
  - Cigarettes, alcohol and petrol
- This will further be explored in the next section 1.4, market failure

# The Graph



## Specific Tax

Specific amount to  
Be paid for a every unit of a  
good



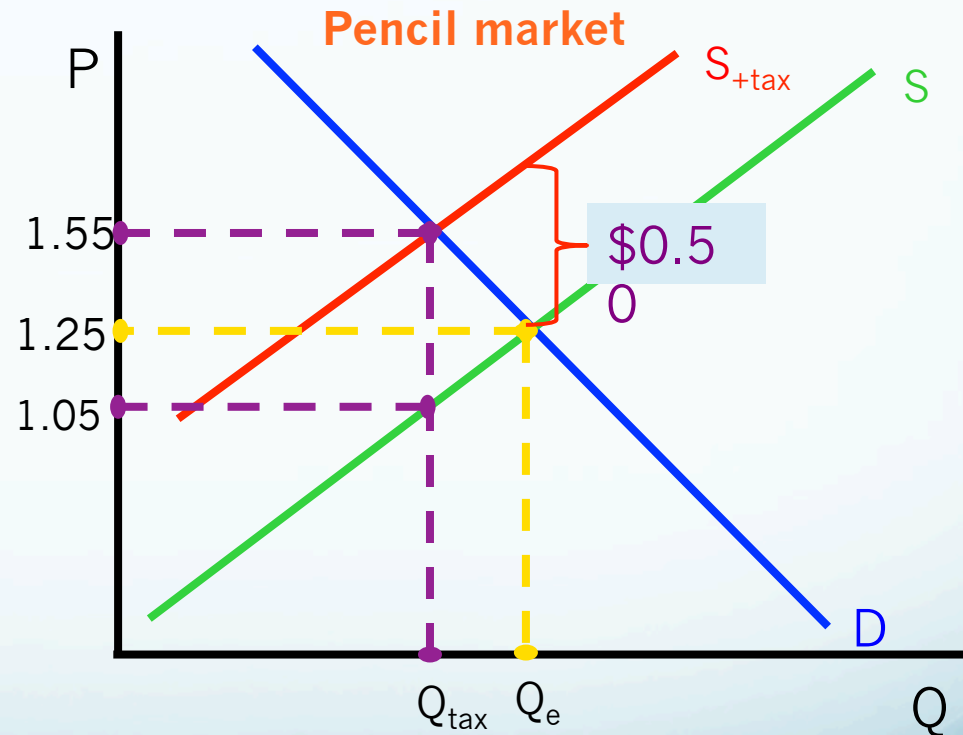
## Ad Valorem

(based on % of the  
purchased price )

# Example

## Examine the market for pencils.

- Assume the government decides to place a \$0.50 tax on pencil production to raise revenue to support the pen industry.
- The tax is an additional cost for pencil producers, so the supply of pencils decreases.
- Supply will shift UP by \$0.50
- The price of pencils increases from \$1.25 to \$1.55.
- Once the tax is paid, pencil producers get to keep just \$1.05





# Stakeholder Consequences

- **Tax Raise Prices:**
  - Tax shifts supply to the left, consequently, the  $P_e$  of the product will rise
- **Tax Reduces Output:**
  - Supply will shift to the left due to increase in cost. Reduced supply will reduce output.
- **Market Size Shrinks:**
  - Reduced output means reduced market size.
- **Consumers Suffer:**
  - Will pay higher prices and receive less of the product
- **Producers Suffer:**
  - They produce less, hence less profits
- **Government Benefits:**
  - Increase in Government revenues (taxes)

# Example

## Determining the Effect of Indirect Taxes

- As we saw, a tax reduces the supply of a good and increases the price.

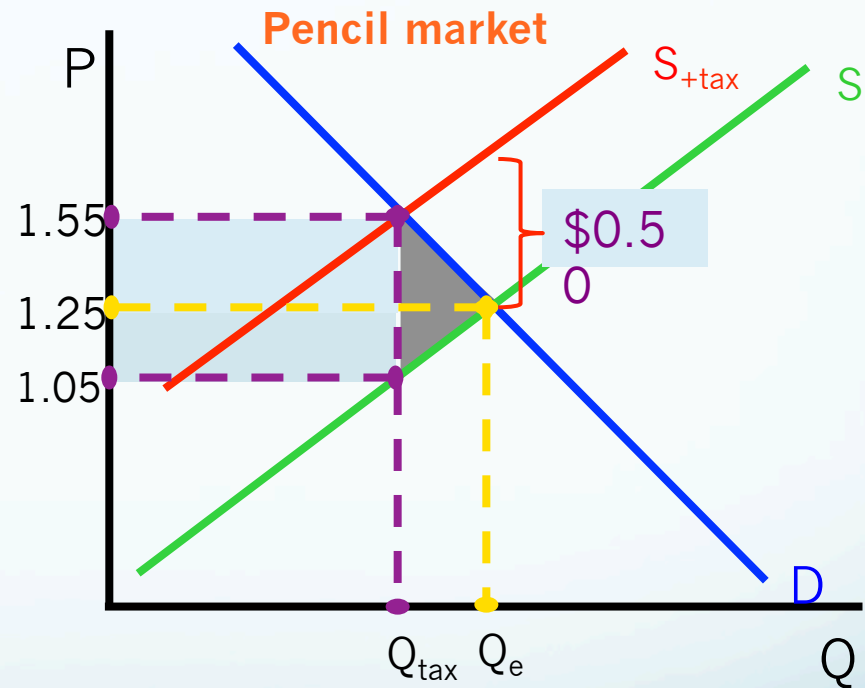
### We noticed:

- The price of the good does not increase by the full amount of the tax
- The producers of the good do not keep the full price paid by consumers, as they must pay the tax
- There is a loss of total welfare in the market resulting from the tax.

# Example

## The \$0.50 tax on pencils...

- Increase the price consumers pay by \$0.30.
- Decreases the price producers get to keep by \$0.20.
- Decreases the output from  $Q_e$  to  $Q_{tax}$
- Imposes a burden on consumers equal to the blue area
- Imposes a burden on producers equal to the red area.
- Raises government revenue equal to the blue and red areas.
- Causes a net loss of total welfare equal to the gray area.



# Test your knowledge

- With your new partner, answer the following questions
- Post answers on you blogger under 1.3 Government intervention
  1. Explain, using examples, how specific and Ad valorem tax work.
  2. Discuss the effect of indirect taxes on different stakeholders

# Tax Incidence

HL ONLY

# The Effects of an Indirect Tax and PED

- In the previous example, consumers paid \$0.30 of the \$0.50 tax and producers paid only \$0.20.
- The tax was shared, but consumers paid the larger share.
- Determining who will pay the larger share of a tax requires us to examine the price elasticity of demand for the good being taxed.

# If demand is relatively elastic:

- Producers will bear the larger burden of the tax.
- Firms will not be able to raise the price by much out of fear of losing all their customers, therefore price will not increase by much,
- but producers will get to keep less of what consumers pay.

# If demand is relatively inelastic:

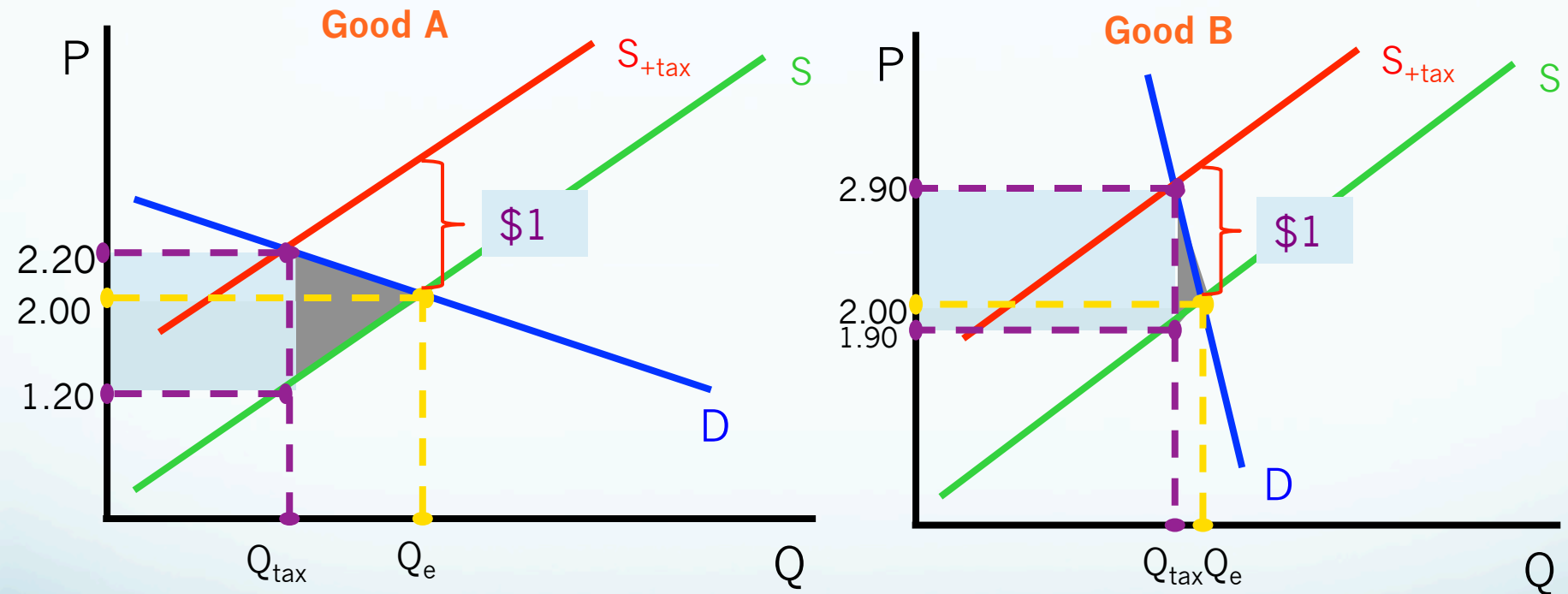
- Consumers will bear the larger burden of the tax.
- Firms will be able to pass most of the tax onto consumers, who are not very responsive to the higher price,
- thus will continue to consume close to what they were before the tax.



# Elasticity and government revenue:

- The implication for government of the above analysis is that if a tax is meant to raise revenue,
- it is better placed on an inelastic good rather than an elastic good.
- Taxing elastic goods will reduce the quantity sold and thus not raise much revenue.

# Exercise/Example



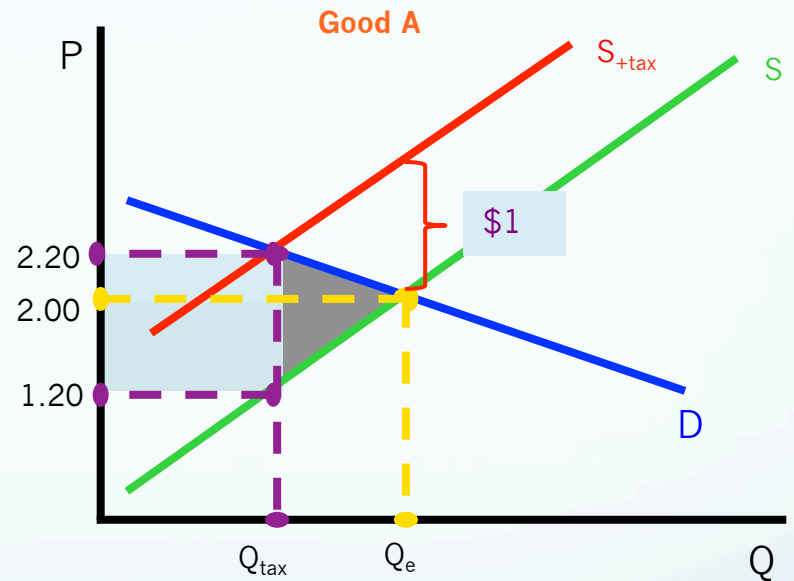
## The Effects of an Indirect Tax and PED

Examine the effects of the same \$1 tax on the two goods below, one a highly elastic good, the other a highly inelastic good.

# Example- Good A

## The \$1 tax on Good A (highly elastic demand):

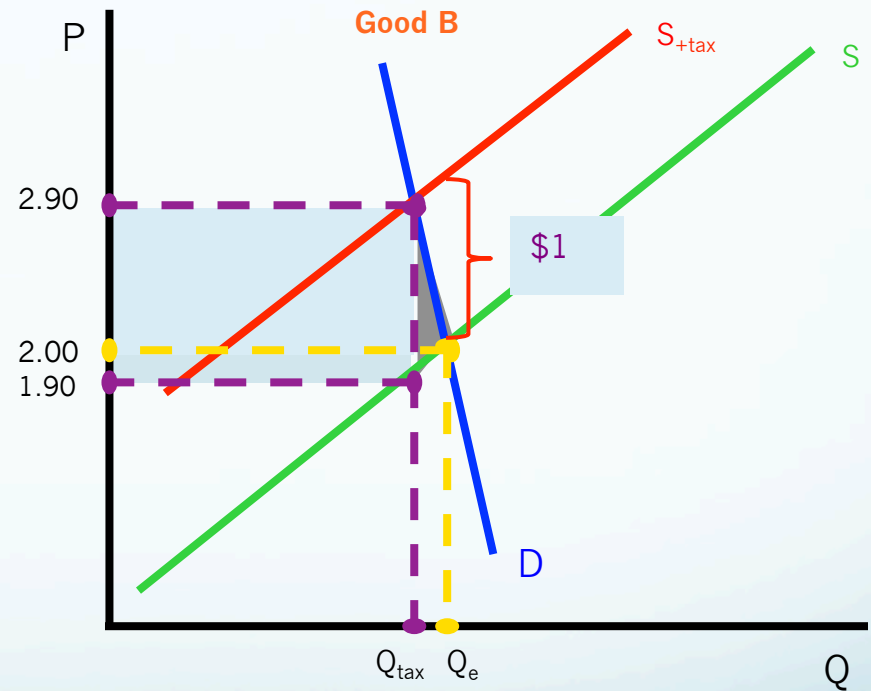
- \$0.80 is paid by producers, and only \$0.20 by consumers
- Quantity falls dramatically.
- The loss of welfare (gray triangle) is large
- Revenue raised is small due to the large decrease in  $Q$



# Example- Good B

## The \$1 tax on Good B (highly inelastic demand):

- \$0.90 is paid by consumers, and only \$0.10 by producers
- Quantity does not fall by much
- The loss of welfare (gray triangle) is small
- Revenue raised is greater than Good A because the quantity does not fall by much



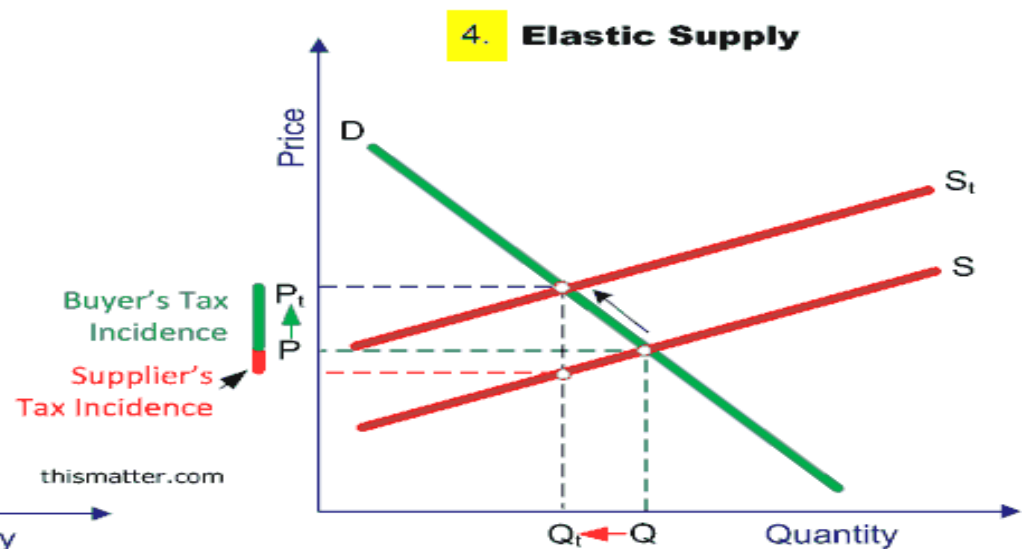
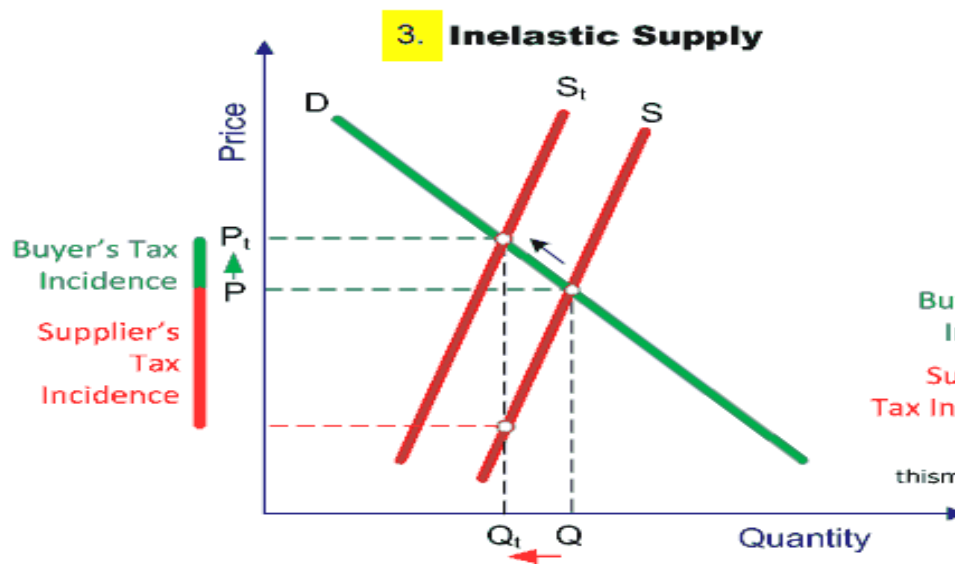
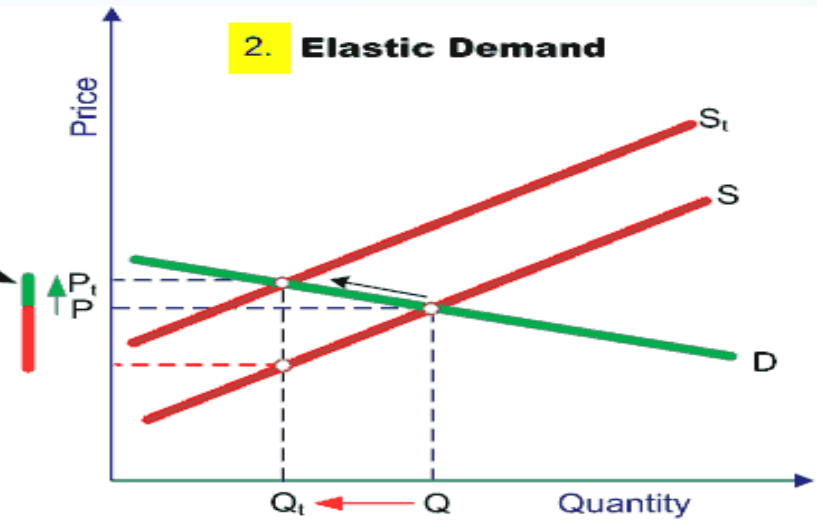
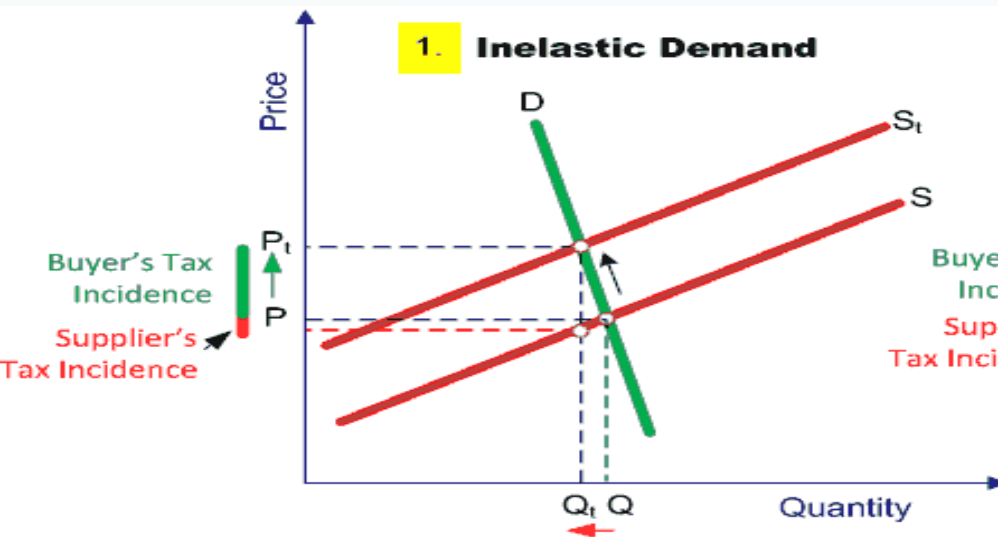
# Government revenue

- Observations
- *Taxing goods with relatively inelastic demand will raise more revenue and lead to a smaller loss of total welfare, while taxing goods with elastic demand will lead to a larger decrease in quantity and a greater loss of total welfare.*

# Notice

- PED is Similar to PES
  - We observe:
    - Consumers pay higher prices
    - Burdon of tax is shared b/t consumers and producers
    - There is larger DWL
- $PED > PES$  (elastic good)
  - We observe:
    - Consumers pay a higher price
    - Burdon of tax is higher for producers
    - There is a larger DWL
- $PED < PES$  (inelastic good)
  - We observe:
    - Consumers pay higher prices
    - Burdon of tax is higher for consumers
    - There is a smaller DWL

# Other resources



# Textbook Reference

- Refer to page 100 of your textbook
- Also read the following link on tax incidence
- <http://thismatter.com/economics/tax-incidence.htm>



# Test your Knowledge

- Watch the following videos and answer the given questions.
- <http://www.econclassroom.com/?p=2771>
- <http://www.econclassroom.com/?p=2774>
- Explain, using diagrams, how the incidence of indirect taxes on consumers and firms differs, depending on the price elasticity of demand and on the price elasticity of supply.

# The Incidence and Linear Functions

- Tax is an additional cost on producers.
- Therefore this will affect the supply curve and the function
- Therefore we should subtract the tax from the price consumers paid

# Example

Consider the supply of bread in a small town:  $Q_s = -200 + 150P$

Assume a \$1 tax is imposed on bread producers. This means that whatever consumers pay ( $P$ ), producers will keep \$1 less. The new supply equation is therefore:

$$Q_s = -200 + 150(P - 1)$$

This can be simplified:

$$Q_s = -200 + 150P - 150$$

The new supply of bread is:

$$Q_s = -350 + 150P$$

# Example

## The Effects of an Indirect Tax in Linear Supply Equations

A \$1 tax on the production of bread cause the supply to decrease.

The new supply of bread is:

$$Q_s = -350 + 150P$$

### Notice:

- The 'c' variable in the equation decreased. This is the Q-intercept of supply, which is now lower on the Q axis, meaning supply has shifted to the left by 150 units, or up by \$1.
- The 'd' variable has not changed. The tax does not change the *responsiveness* of producers to price changes. They will still supply 150 more loaves for every \$1 increase in price.

# Test your knowledge

- Watch the following video:
- <http://www.econclassroom.com/?p=2784>
- Follow the example in your textbook (page 104 of section 1.3)
- Do HL Exercise questions on page 107 (this counts as an assignment grade)