

EE 442
Economics of Public Revenue

Topic 5
Tax Incidence

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Introduction

- ***Tax incidence*** is the analysis of the effect of a particular tax on the distribution of economic welfare. Tax incidence is said to "fall" upon the group that ultimately bears the burden of, or ultimately has to pay, the tax. The key concept is that the tax incidence or tax burden does not depend on where the revenue is collected, but on the price elasticity of demand and price elasticity of supply.

- Who bear the real tax burden?

Producers

Consumers

- The person who pay taxes may not be the statutory taxpayers. Producers can shift the tax burden to consumers or owners of the factors of production.
- Thus, the real tax burden study will consider the reasons and conditions which allow for tax burden shifting. What are the conditions for tax burden shifting? How much these conditions can affect on tax burden shifting?

Introduction

- In the case of Thailand which has high proportion of indirect taxes, especially VAT, which the real tax incidence may not fall on the taxpayers.

Introduction

- We will study about “the fairness of taxation”.
 - Partial equilibrium tax incidence: three rules of tax incidence
 - General equilibrium tax incidence

3 Rules of tax incidence

- The statutory taxpayer may not be the same as the person who bear the real tax burden.
- The tax incidence or tax burden does not depend on market (where the revenue is collected).
- The tax burden will depend on the price elasticity of demand and supply.

Tax bills do not show the real person who bears tax burden.

- ***Statutory incidence*** refers to the individual or group of individuals who are responsible for physically remitting a particular tax to the government.
- ***Economic incidence*** refers to the individual or group of individuals who ultimately bear the actual cost of the tax.
- Example:

With no taxes, the price of gasoline is 30 baht per liter.

The government imposes 1 baht per liter tax on gasoline.

The tax is collected from the producer.

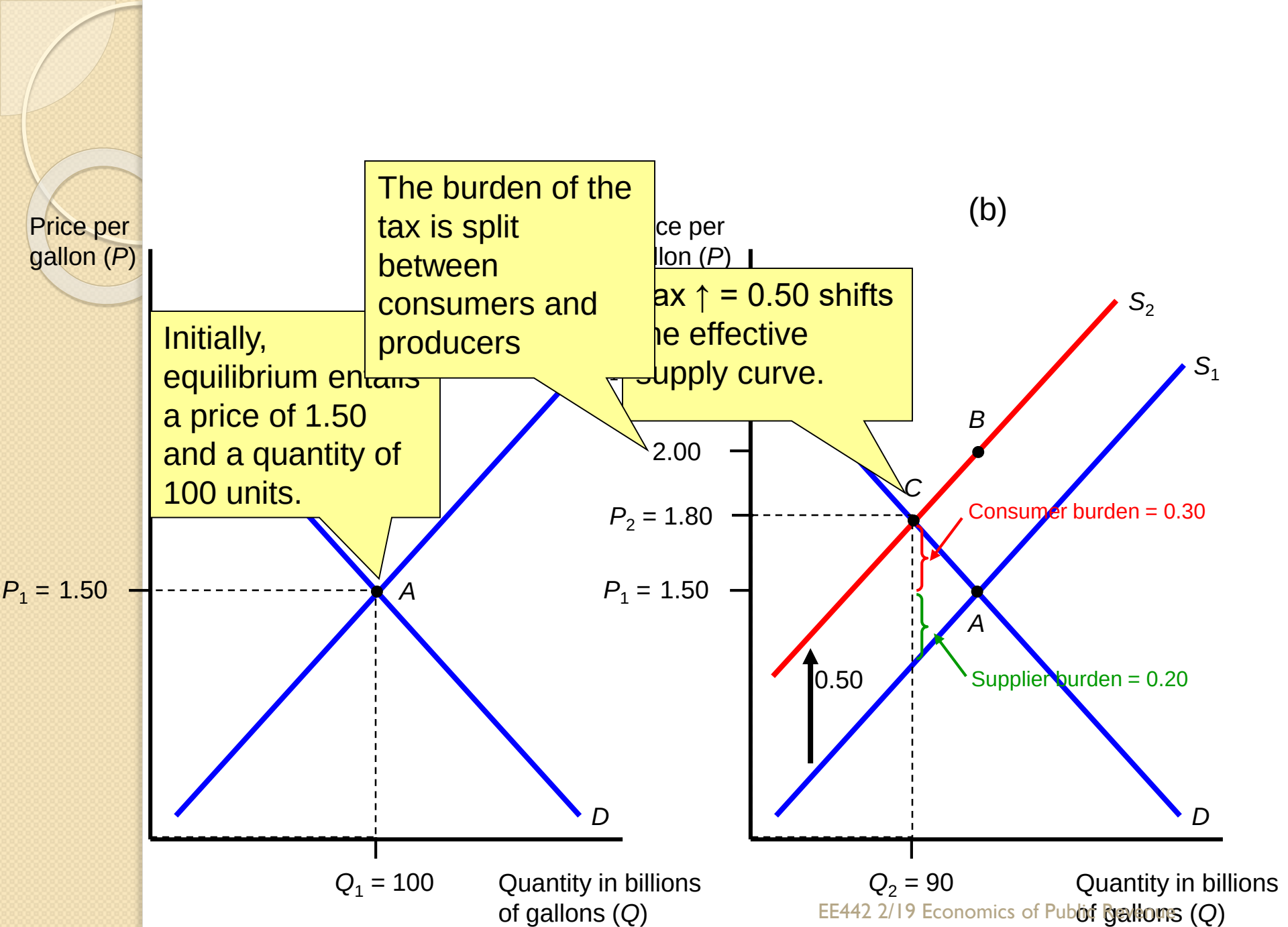
In response to the tax, the producer raises the price of gasoline to 31 baht per liter.

- *Who bears the statutory and economic burdens of the tax?*

→ Statutory burden is on the producer, but economic burden is on the consumer.

Tax bills do not show the real person who bears tax burden.

- When the government collects tax from producers and producers increase the price (in order to substitute the increasing in tax burden). This is a process of producers' tax burden shifting.
 - Producers' tax burden = (pre-tax price – post-tax price) + tax payments of producers
- When the government collects tax from consumers, the consumers will shift their tax burden by not accepting the new price so the price will be decreased. Then the tax burden will shift back to the producers or sellers.
 - Consumers' tax burden = (post-tax price – pre-tax price) + tax payments of consumers



Tax bills do not show the real person who bears tax burden.

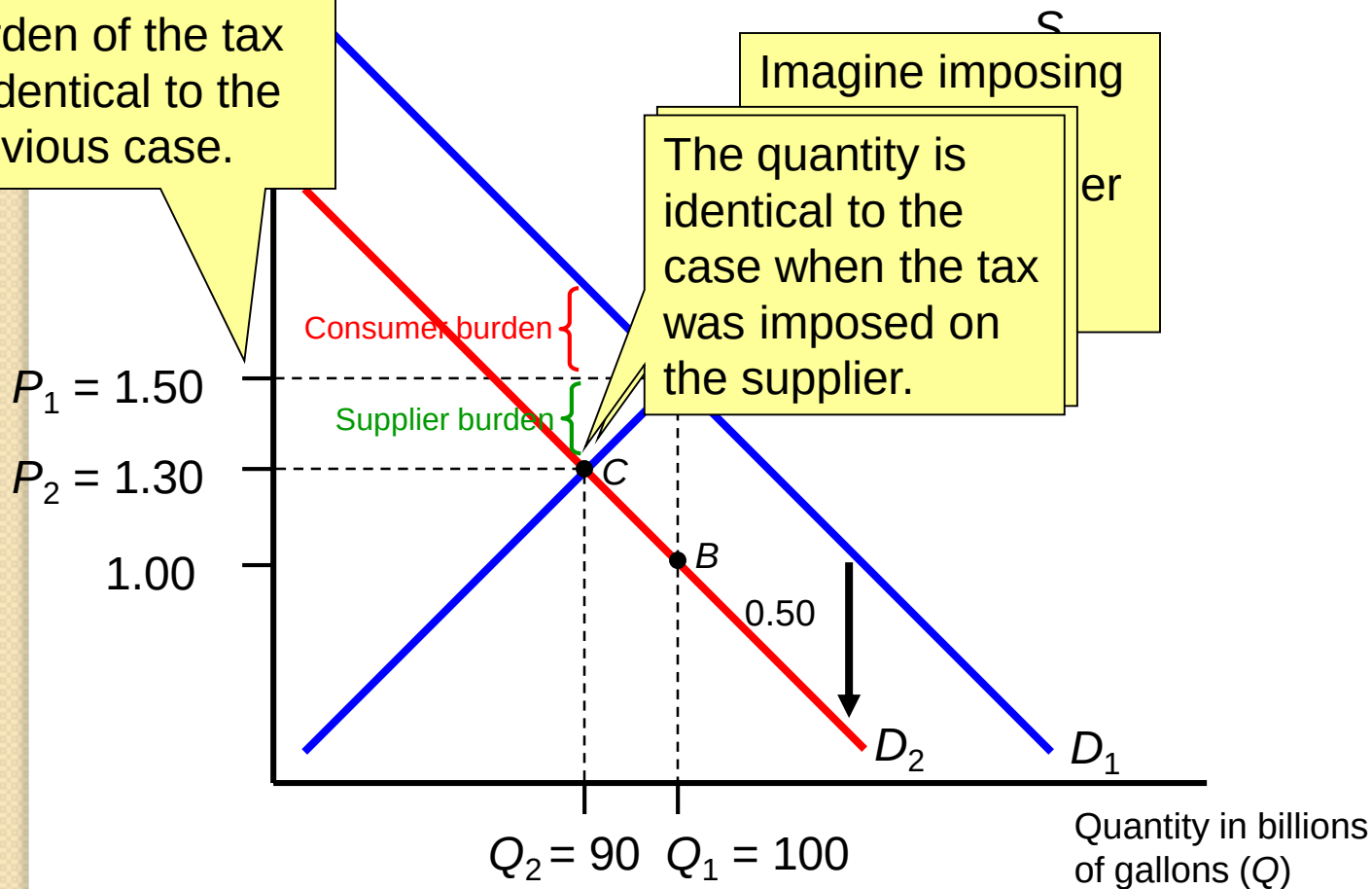
- The equilibrium price is \$1.50 per gallon and the equilibrium quantity is 100 gallons.
- When increasing tax by \$0.50, the marginal costs of producers increased. Supply curve shifts to S_2 .
- At the original equilibrium price, there is excess supply equals to 20 gallons; the price increased to \$1.80 which the market will be in a new equilibrium.

- The price of gasoline in the market is changed (increased).
- The producers have to pay tax to the government.
- From the equations:
 - Consumers' tax burden = (post-tax price – pre-tax price) + tax paid by consumers so
 - Consumers' tax burden = $(1.80 - 1.50) + 0 = 0.30$
 - Producers' tax burden = (pre-tax price – post-tax price) + tax paid by producers so
 - Producers' tax burden = $(1.50 - 1.80) + 0.50 = 0.20$

- Producers do not bear tax burden equals to the amount of tax paid but they will bear a lesser tax burden. Some of the taxes will be shifted to consumers in the form of higher price.
- The difference of prices after taxation is called *tax wedge* which is the difference between the price paid by consumers and the price received by producers.
 - In this case, the consumers pay \$1.80 but the producers receive \$1.30.

- 
- Question: Will we get the same result if the government collect taxes from consumers instead of producers?

The *economic* burden of the tax is identical to the previous case.



- Before tax: The equilibrium quantity is 100 gallons and the equilibrium price is \$1.50/gallon.
- Even though the willingness to pay of the consumers does not change, when the government increase tax by \$0.50 per gallon, the willingness to pay of consumers reduced by \$0.50 (consumers have to pay tax to government). The demand curve shifts to D_2 .
- At the equilibrium price, there is an excess supply of gasoline, producers will reduce the price to \$1.30 in order to get rid of the excess supply.

- Gasoline taxation will have 2 effects:
 - The market price changed.
 - Consumers have to pay tax to the government.
- Consumers' tax burden = (post-tax price – pre-tax price) + tax paid to the government by consumers.
 - Consumers' tax burden = $(1.30 - 1.50) + 0.50 = 0.30$
- Producers' tax burden = (pre-tax price – post-tax price) + tax paid to the government by producers.
 - Producers' tax burden = $(1.50 - 1.30) + 0 = 0.20$



The tax incidence or tax burden does not depend on market.

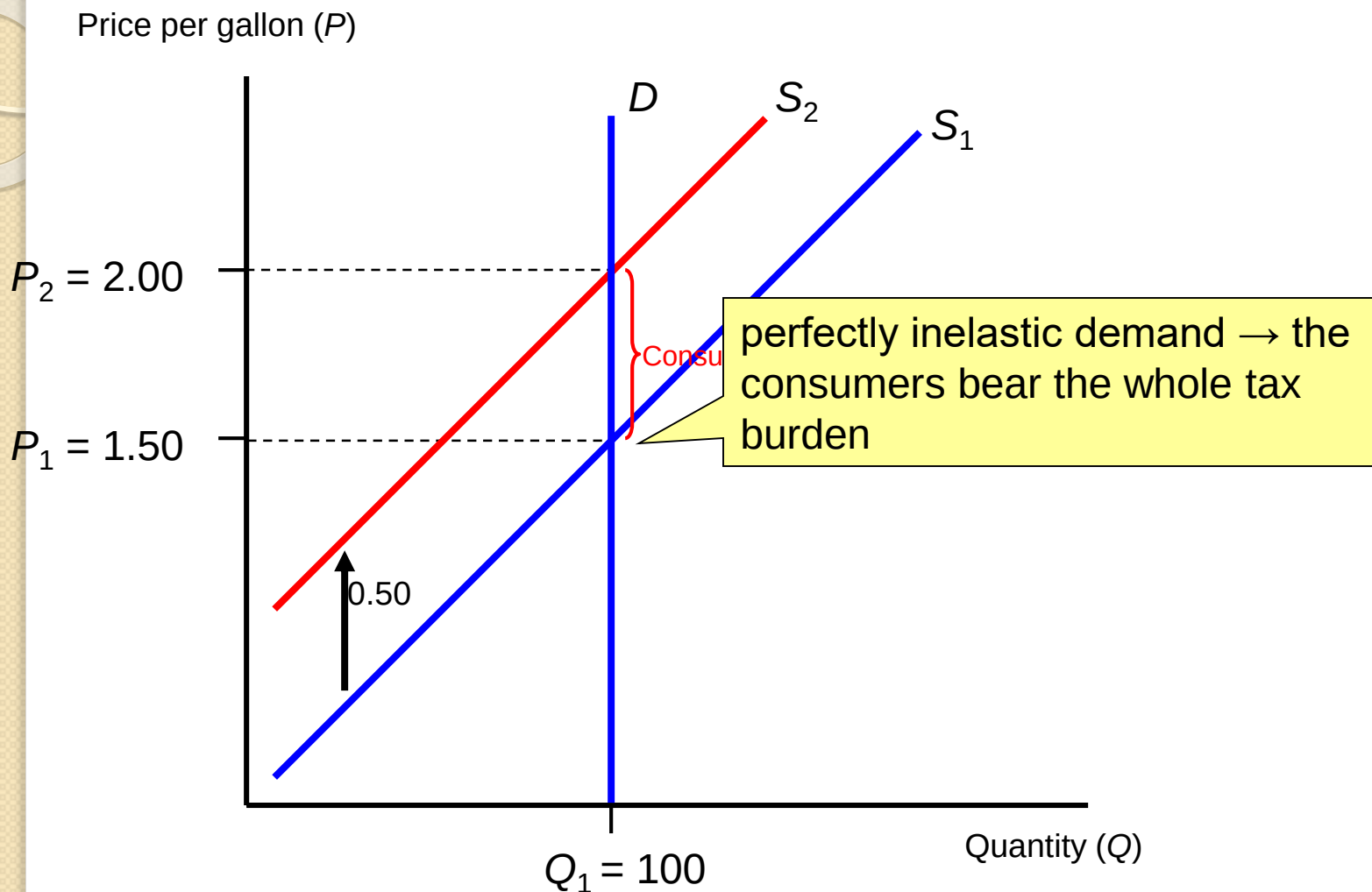
- The tax burden will be equal for both cases: collecting tax from consumers or produces.
- Tax burden distribution does not depend on which sides of the market that the government imposes tax on.

Partial Equilibrium Models: Unit Taxes on Commodities

- Partial equilibrium analysis of per unit tax.
- Per unit tax collection will have effects on prices.
 - *gross price*
 - *after-tax price*: gross price – tax (in case of collect tax from producers) or + tax (in case of collect tax from consumers)

The elasticity of demand and supply and tax incidence

- The price elasticity of supply and demand will affect the amount of tax burden that each group have to bear.
- The group that has a higher price elasticity will be able to avoid tax easier than the group that has a lower price elasticity.



The elasticity of demand and supply and tax incidence

- The new price equilibrium is \$2. When the government collects tax \$0.5, the price will be increased by \$0.50 from the original price. Consumer tax burden = (post-tax price – pre-tax price) + tax payments of consumers
 - Consumer tax burden = $(2.00 - 1.50) + 0 = \$0.50$
- Producer tax burden = (pre-tax price – post-tax price) + tax payments of producers
 - Producer tax burden = $(1.50 - 2.00) + 0.50 = \$0$

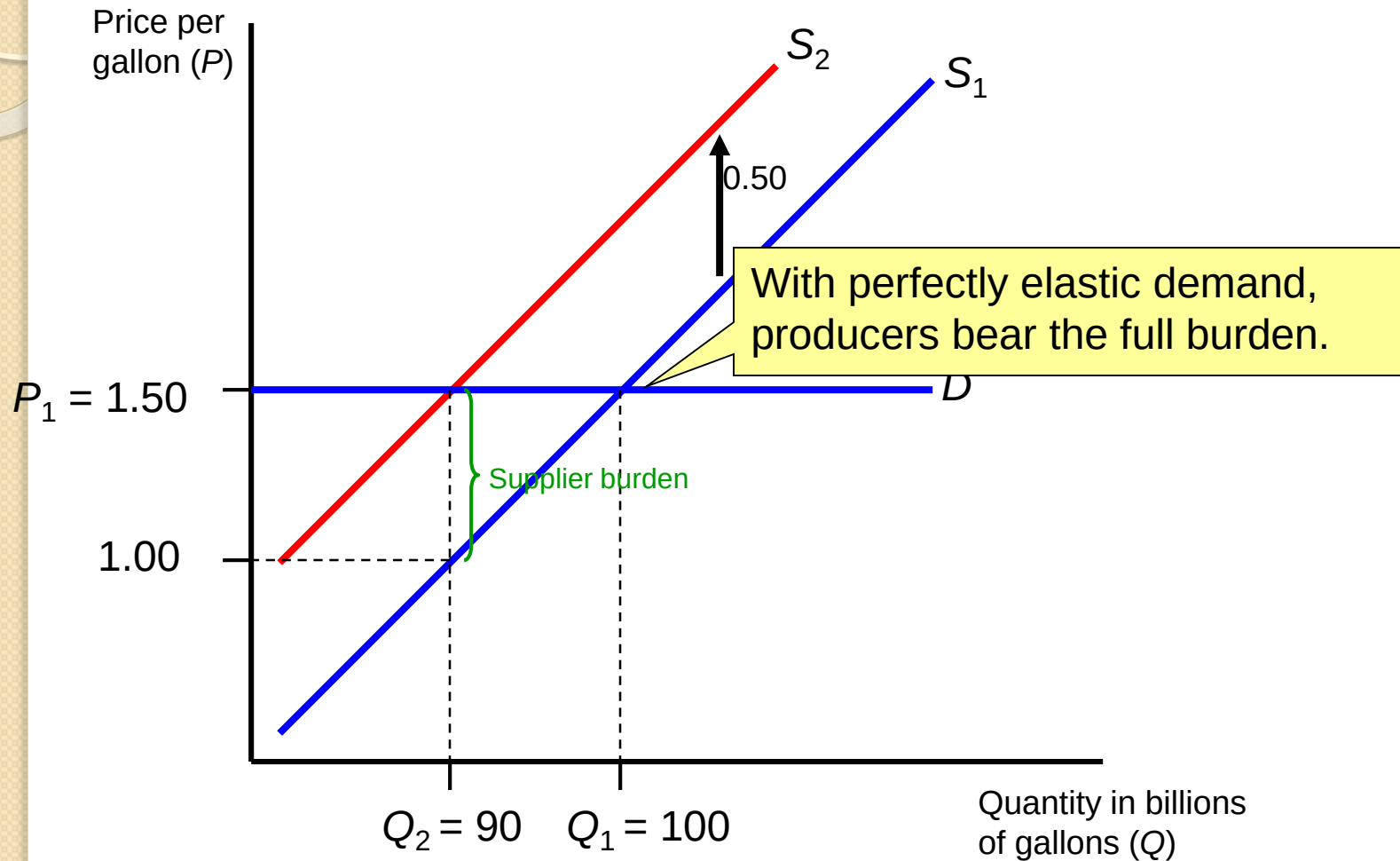
The elasticity of demand and supply and tax incidence

- **Notice:** Even though, the government imposes tax on producers, but the consumers will bear the whole amount of real tax burden.
- ***Full shifting*** is when one group has to bear the whole amount of tax burden.
- From the example:
 - With perfectly inelastic demand, the consumers will bear the whole amount of tax burden.

The elasticity of demand and supply and tax incidence

- In the case of perfectly elastic of demand.

Example



The elasticity of demand and supply and tax incidence

- The original market price equilibrium is at \$1.50.
- Consumer tax burden = (post-tax price – pre-tax price) + tax payments of consumers
 - Consumer tax burden = $(1.50 - 1.50) + 0 = 0$
- Producer tax burden = (pre-tax price – post-tax price) + tax payments of producers
 - Producer tax burden = $(1.50 - 1.50) + 0.50 = 0.50$

The elasticity of demand and supply and tax incidence

- In this case, the producers have to bear the whole amount of tax burden because the consumers will be able to avoid tax by not buying any taxed goods.
- Summary:
 - The group with more inelasticity of supply/demand will bear more tax burden.
 - The group with more elasticity of supply/demand will be able to avoid tax.

The elasticity of demand and supply and tax incidence

- High elastic demand → easy to find substituted goods (Ex: food, clothes, etc.)
- Inelastic demand → difficult to find substituted goods. (EX: medicine, etc.)
- High elastic supply → producers have more choices of factors of production (EX: food production, cloth production, etc.)
- Inelastic supply → difficult to find factors of production or need to use a special technology of production (EX: land, arts, etc.)

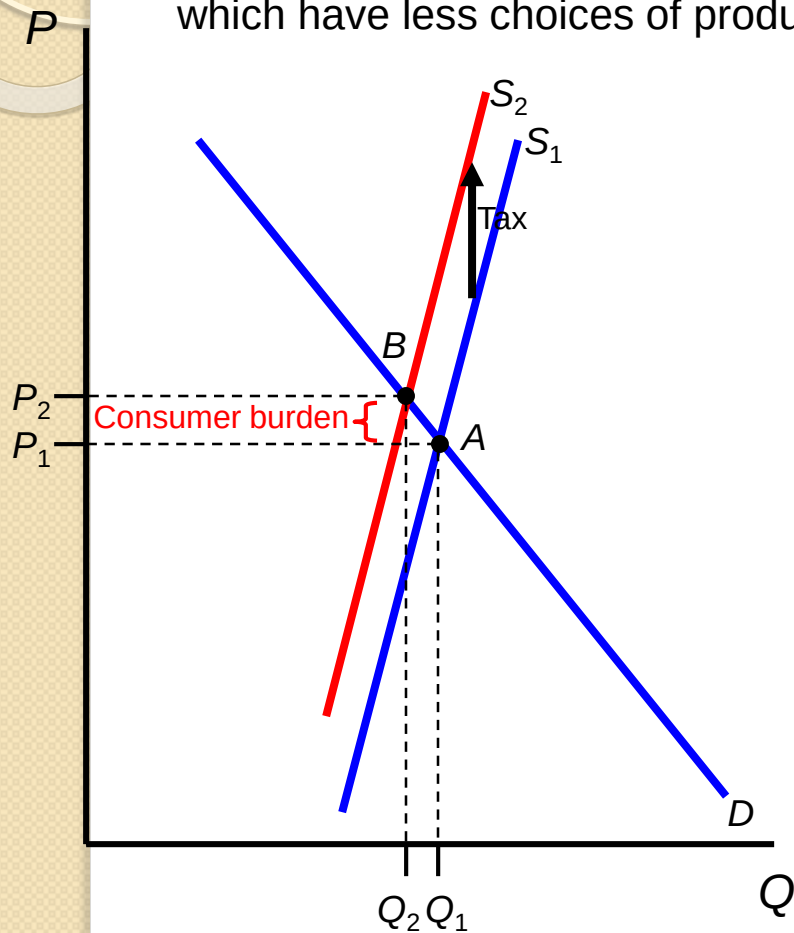
The elasticity of demand and supply and tax incidence

- Case study: Fixed demand and inelastic supply → producers will bear more tax burden

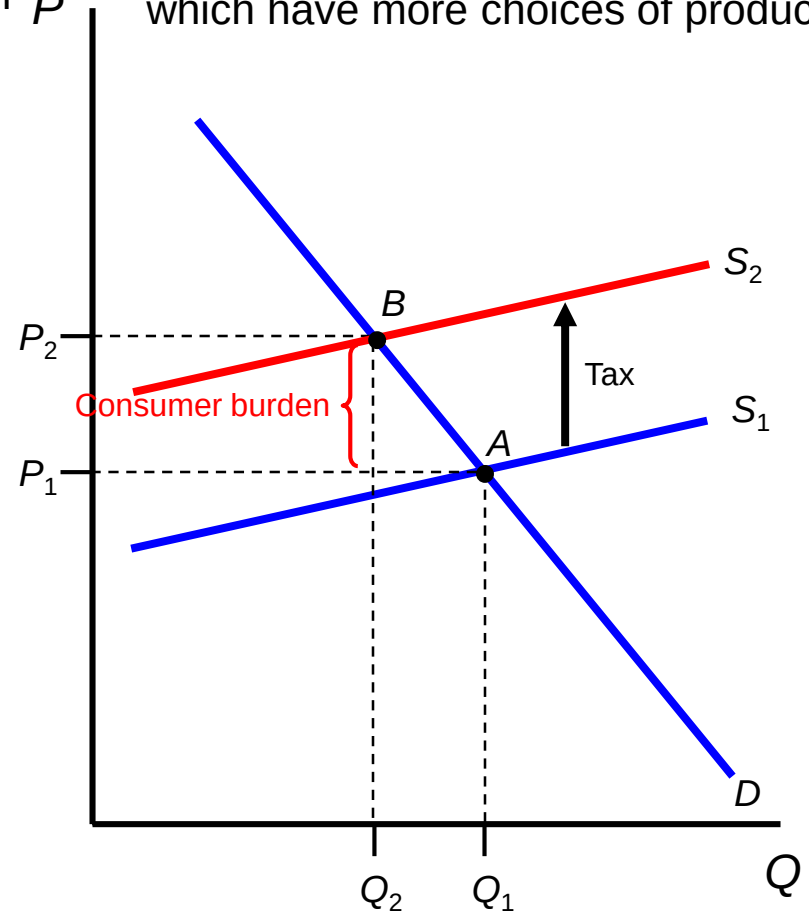
Example

More inelastic supply, smaller
More elastic supply, larger
consumer burden.

(a) collect taxes from iron producers, which have less choices of production



(b) collect taxes from producers which have more choices of production

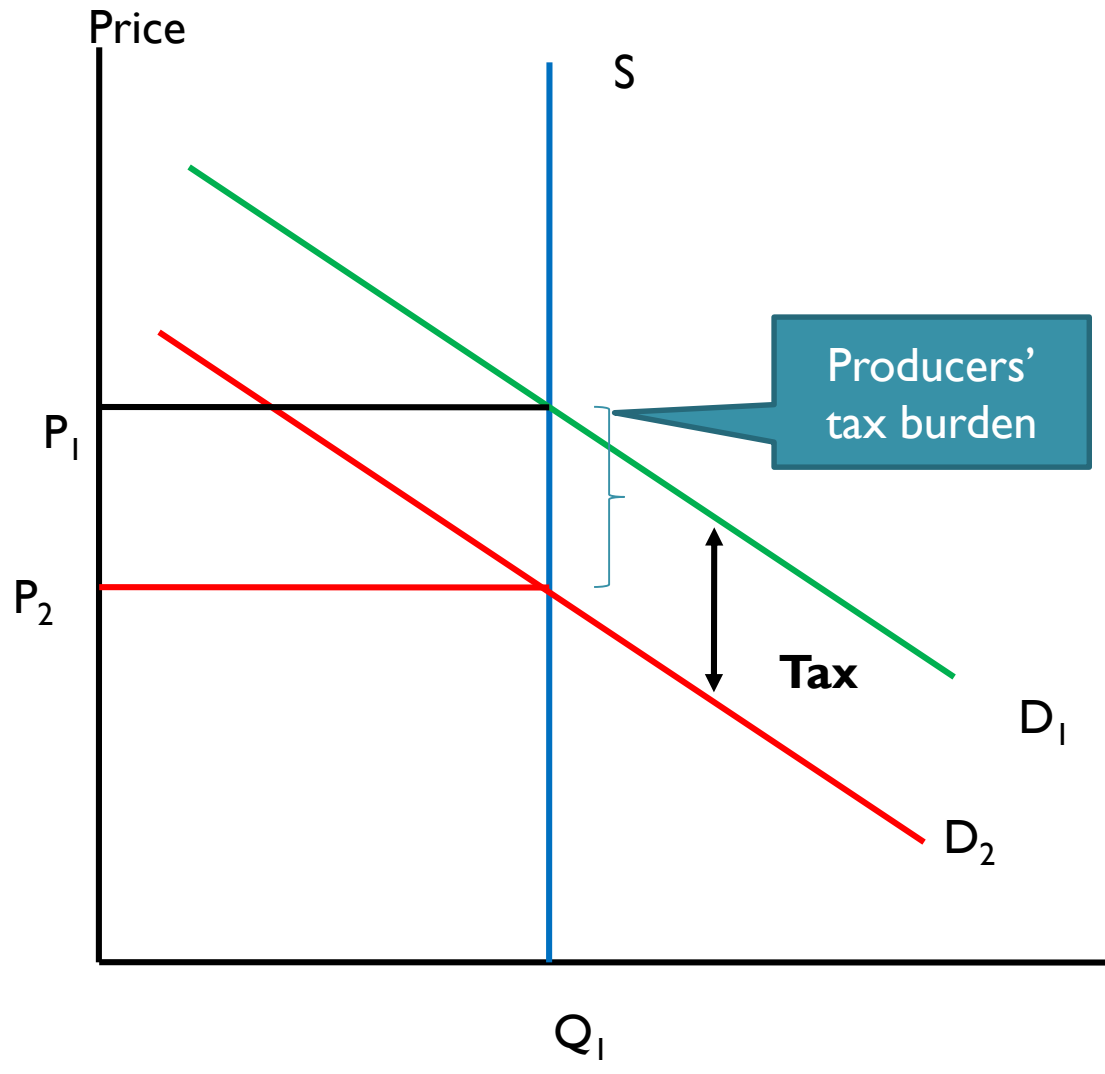


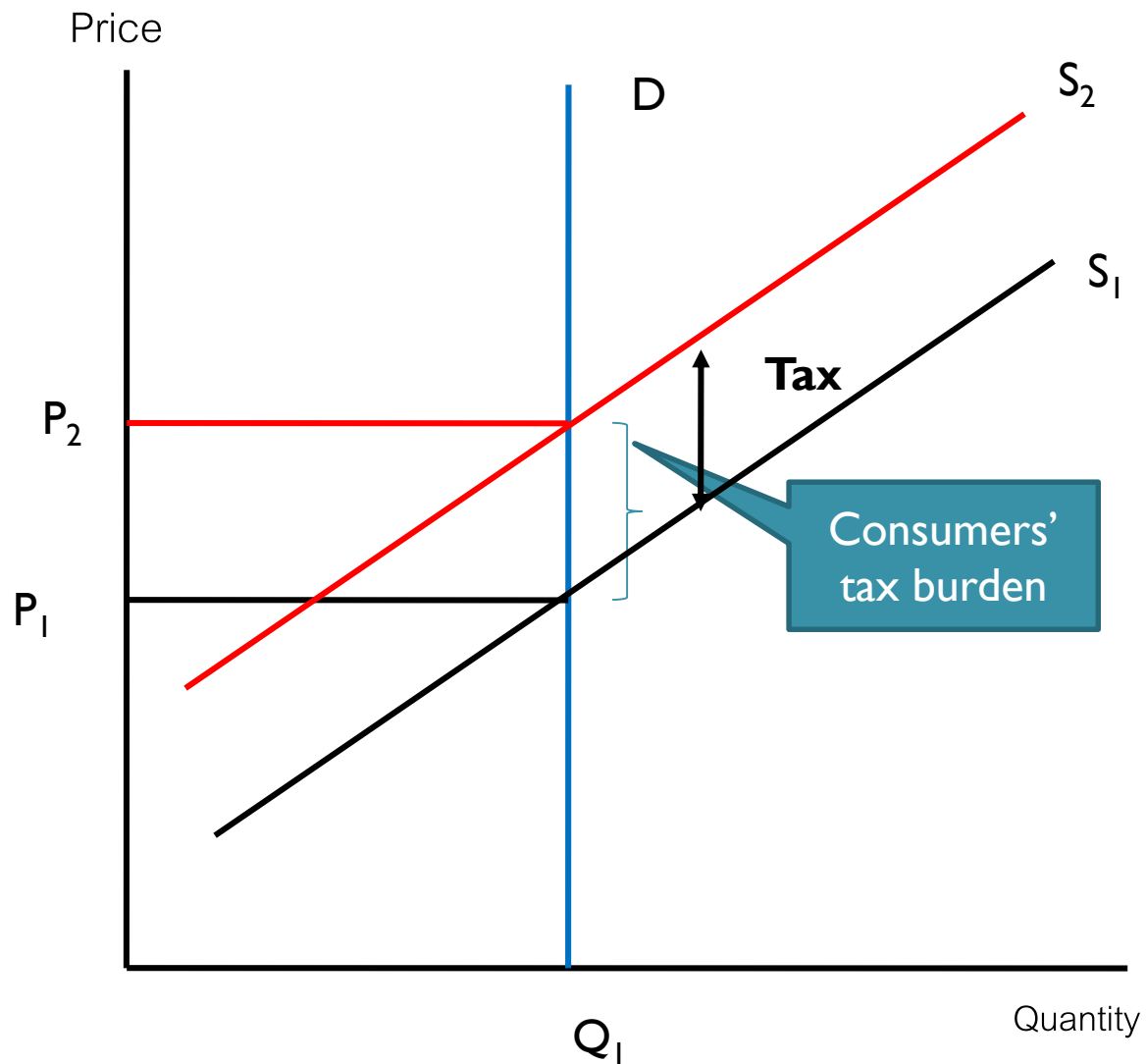
The elasticity of demand and supply and tax incidence

- Figure **a**: The government collects tax on producer who has inelastic supply (fixed capital investment: raw material: iron), the consumers will bear less tax burden but the producers will bear a higher amount of tax burden because they have less choices of production methods.
- Figure **b**: The government imposes tax on producer who has elastic supply, the consumers will bear most of the tax burden.

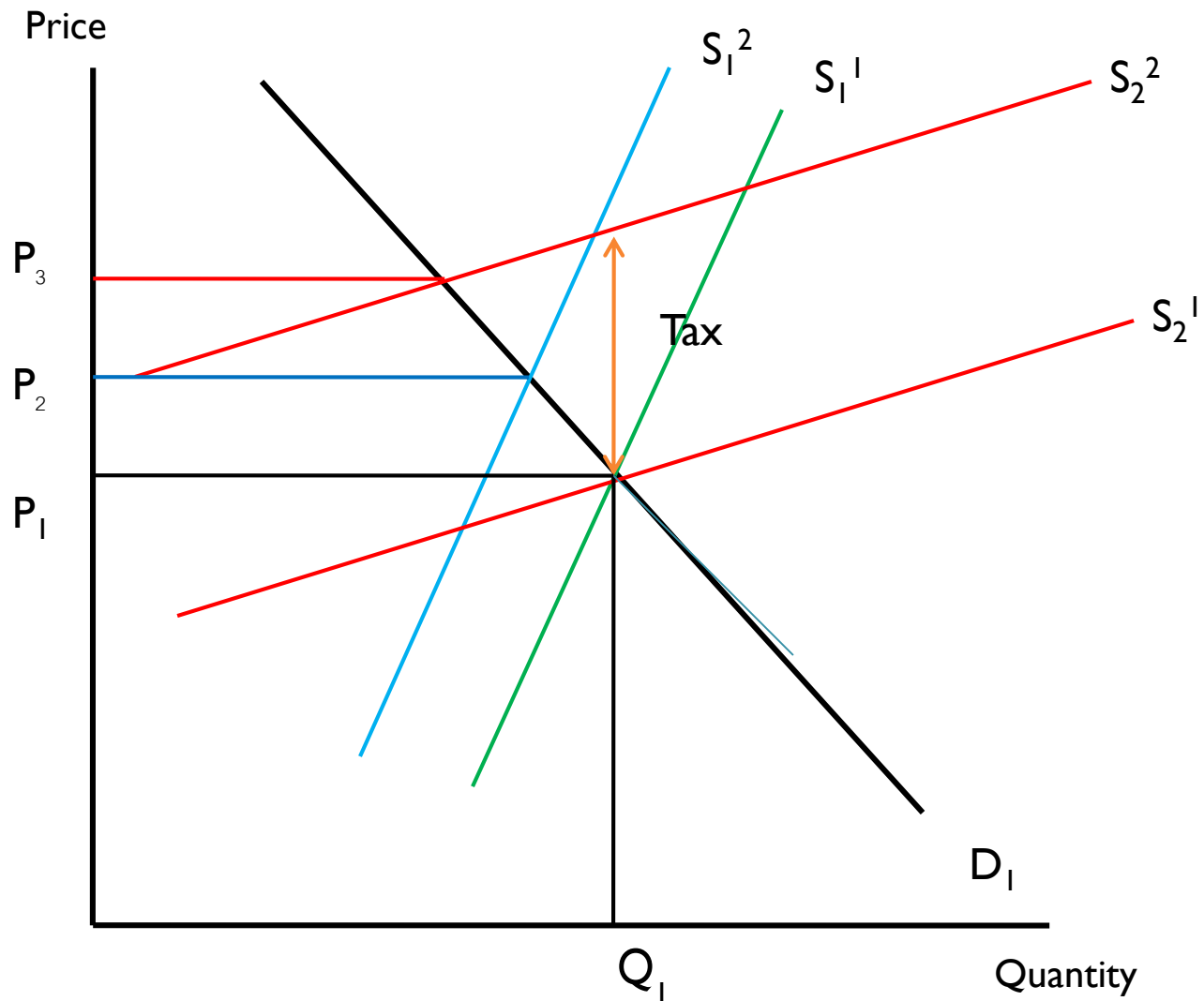
The elasticity of demand and supply and tax incidence

- The study of tax burden will concern with the effect on price not the quantity.

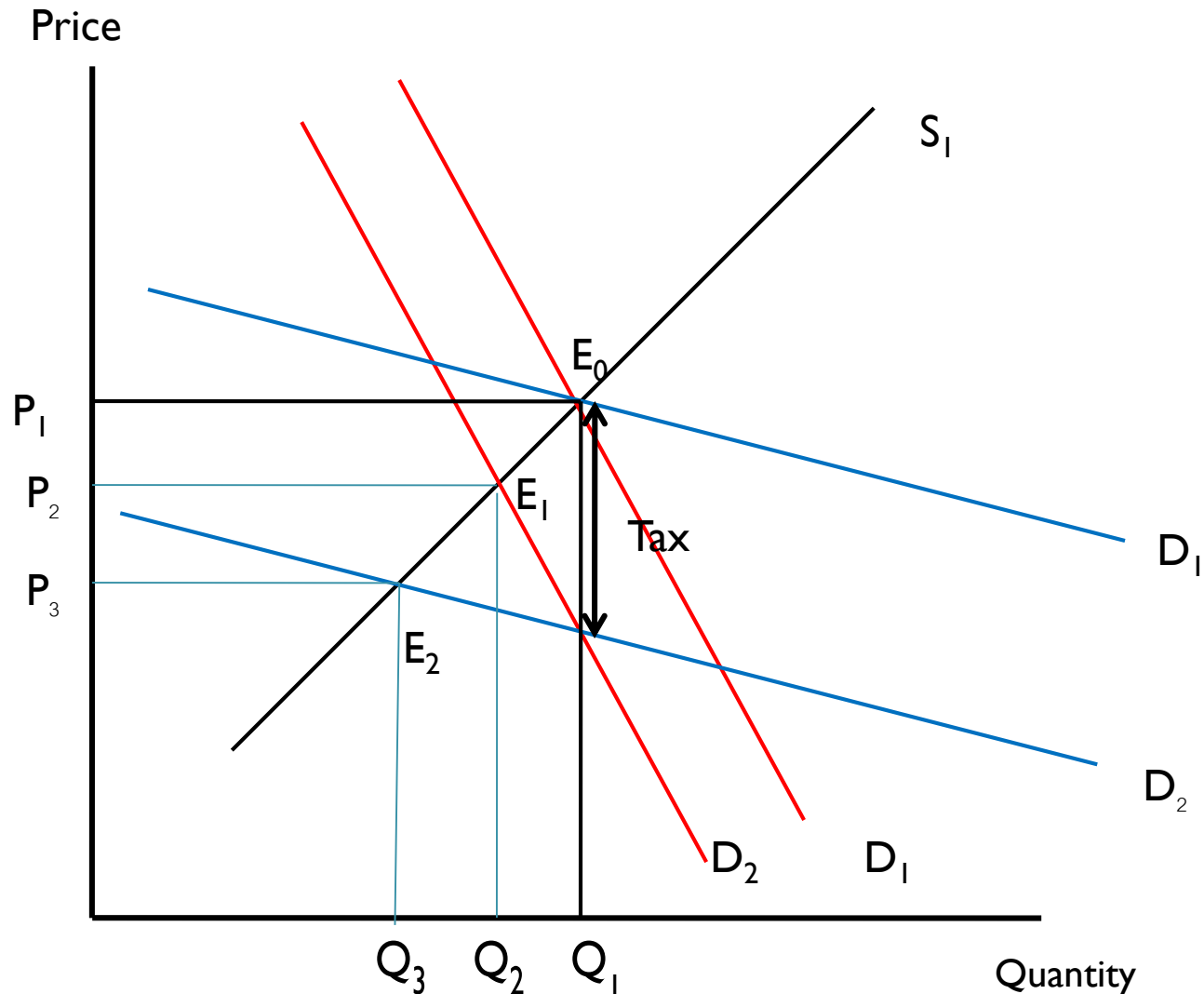




More elastic of supply $\rightarrow$ more tax burden shifting to consumers.



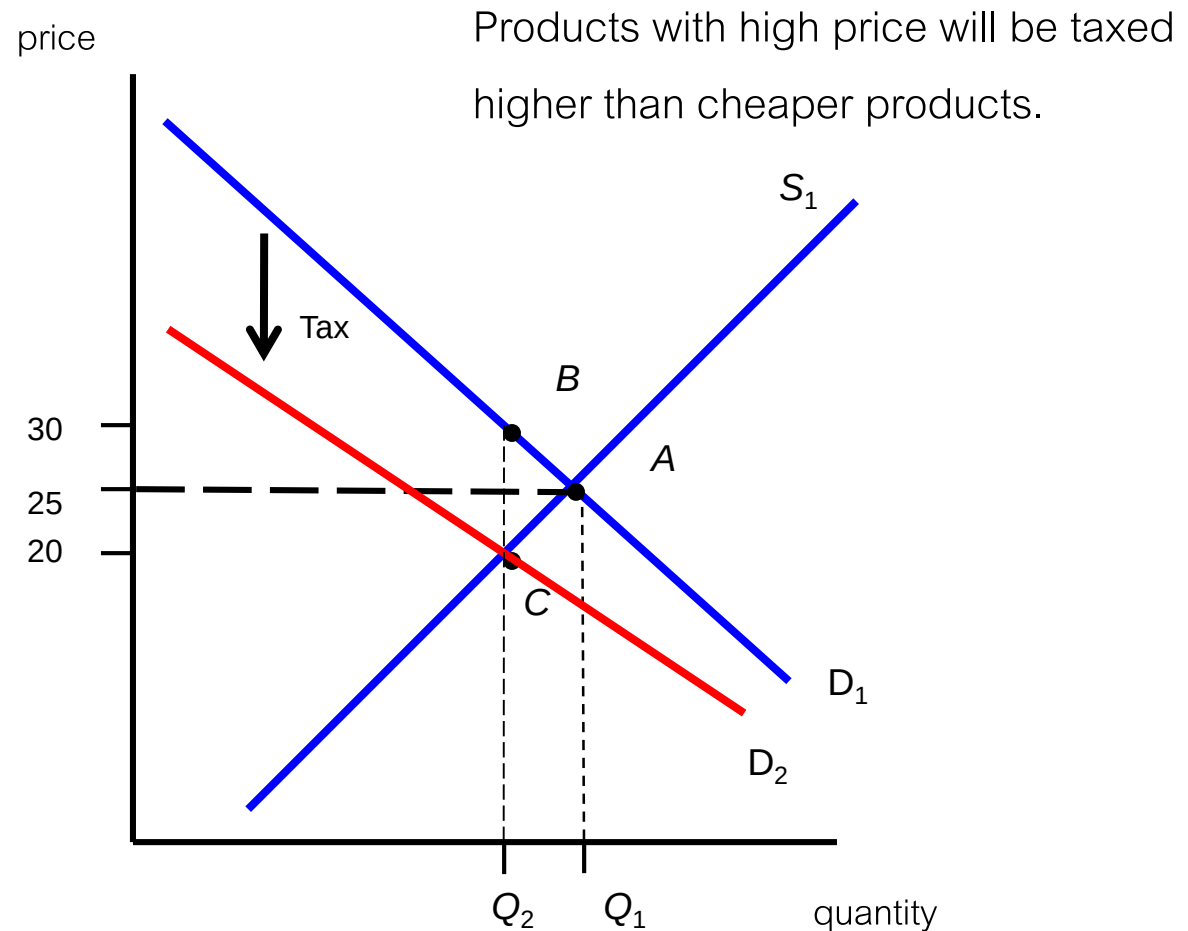
More elasticity of demand $\rightarrow$ more tax burden shifting to producers
(lower price received by producers)



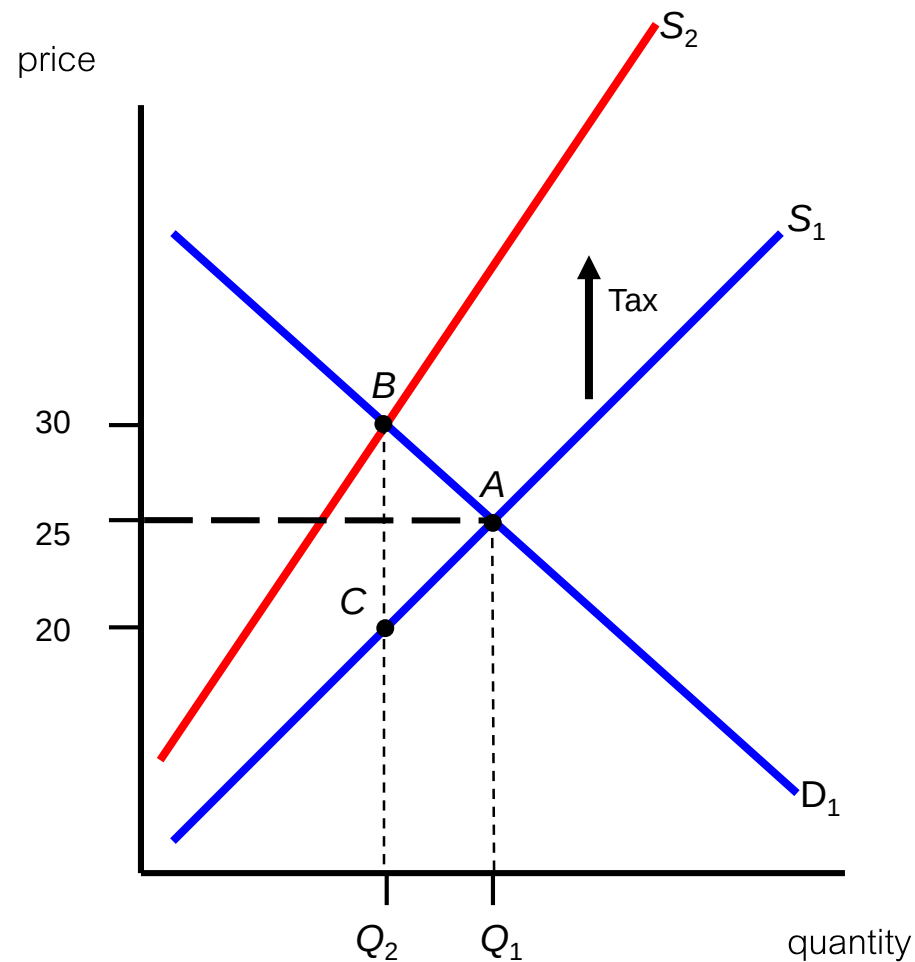
Partial Equilibrium Models: Ad Valorem Taxes

- Ad Valorem Taxes are taxes that are proportional to the value of the item being taxed.
- EX:
 - VAT 7%
 - Excise tax
 - etc
- The analysis will be the same as in the case of unit tax.

Tax Collection on Consumers: Ad Valorem Taxes



Tax Collection on Producers: Ad Valorem Taxes



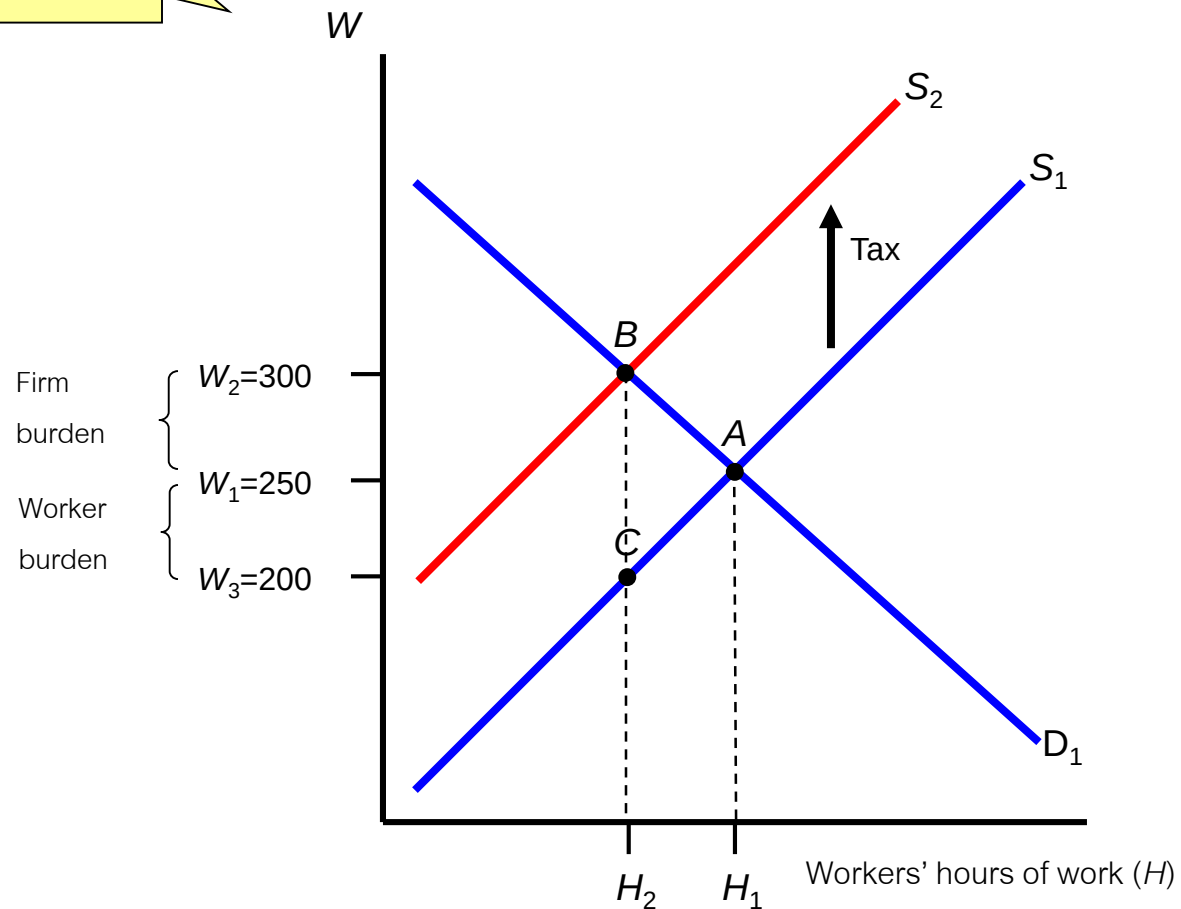
Partial Equilibrium Models: Taxes on Factors of Production

- The tax imposed on factors of production such as labour.

Example

Impose tax on labour

Impose tax on labour → real wages decrease → labour asks for a higher wage.



Tax burden: taxes on factor market

- Impose a 100 baht per work hour tax → returns on work
↓ in every level
- Labour asks for higher wages at the same amount of hours of work → supply curve shifts up (the amount of supply is reduced)
- Labor demand is constant.
- The new equilibrium wage is at 300 baht.
- In this case, both employers and workers bear the same amount of tax burden.

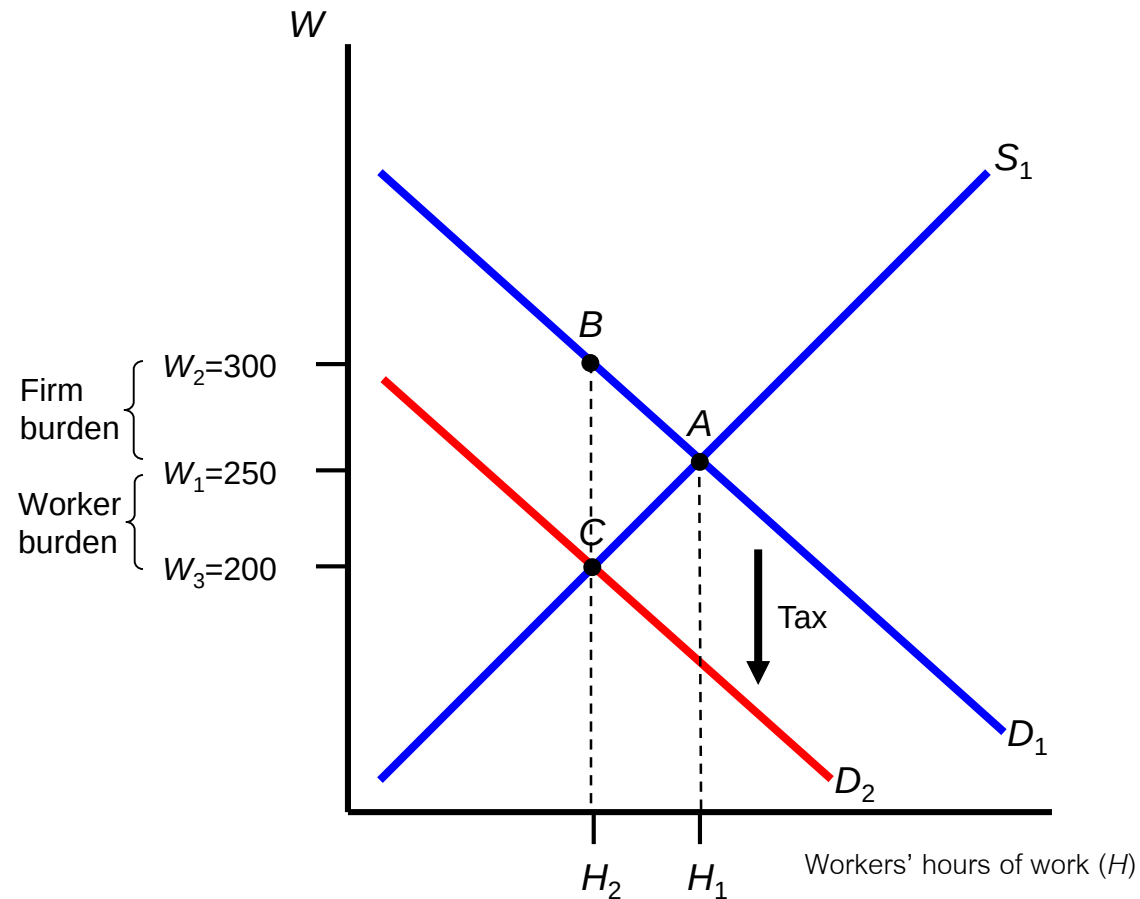
Partial Equilibrium Models: Taxes on Factors of Production

- Impose taxes on firms (or collect taxes from demand for workers)

Example

Impose tax on firms (demand for labour)

Impose tax on demand for labour $\rightarrow$ wage $\downarrow$



Tax burden: taxes on factor markets

- When the government impose taxes on employers (firms)
→ demand curve shifts to D_2 → wage ↓ to 200 baht
- The employers will reduce wage by 50 baht (less than the original equilibrium), but they have to pay 100 baht in tax to the government. The employers will finally pay 300 baht.

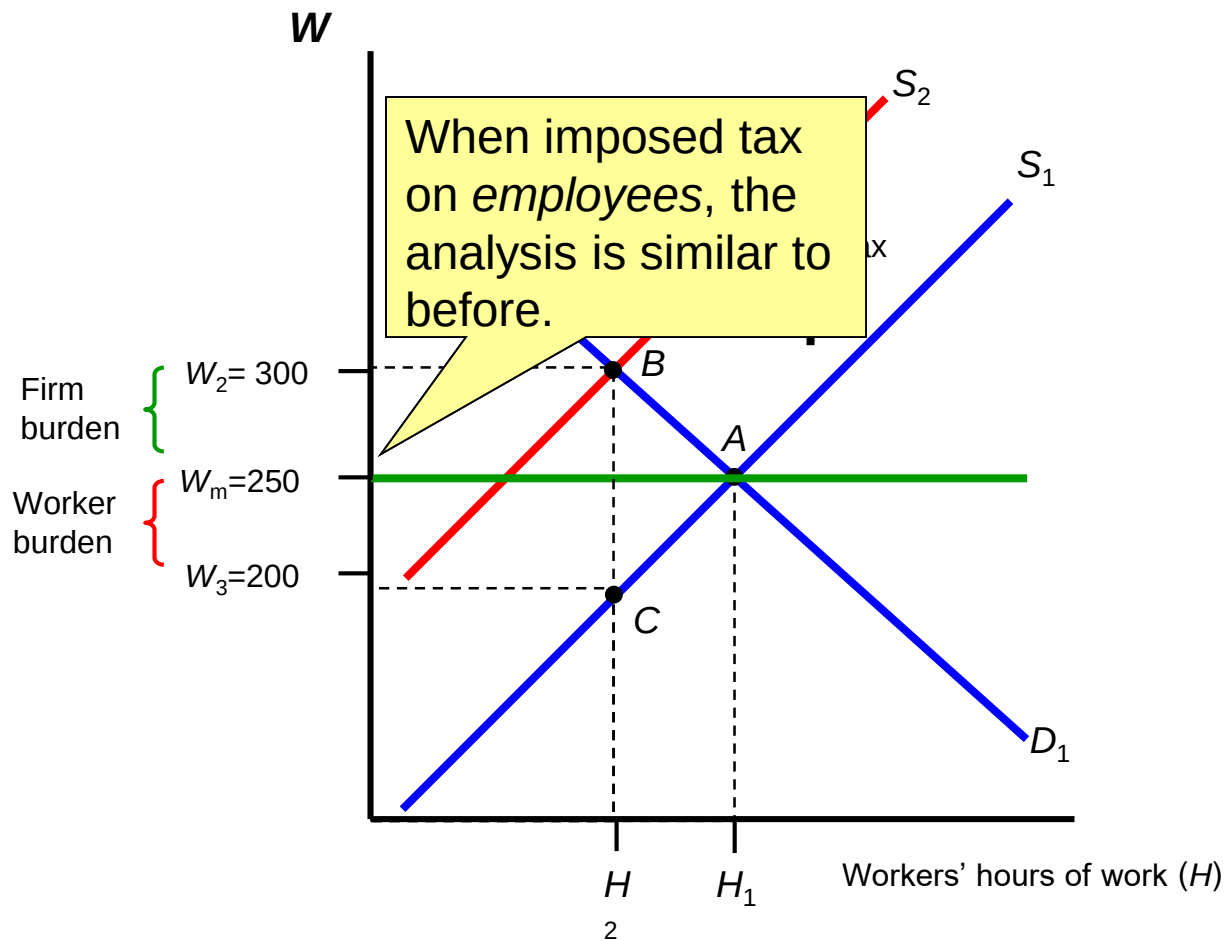
Tax burden: Impose taxes on factor market

- The tax burden result will be the same as taxing workers.
→ It does not matter that the government imposes taxes on firms or workers, again the real tax burden may not be the same as statutory incidence.
- If the wage rates in the factor market are not free to adjust, the analysis will be different from the general case.

Minimum wage

- Minimum wage is set by law. → The employers cannot pay lower than this set rate. → Tax burden will be different from the general case.

Impose tax on labour/employees



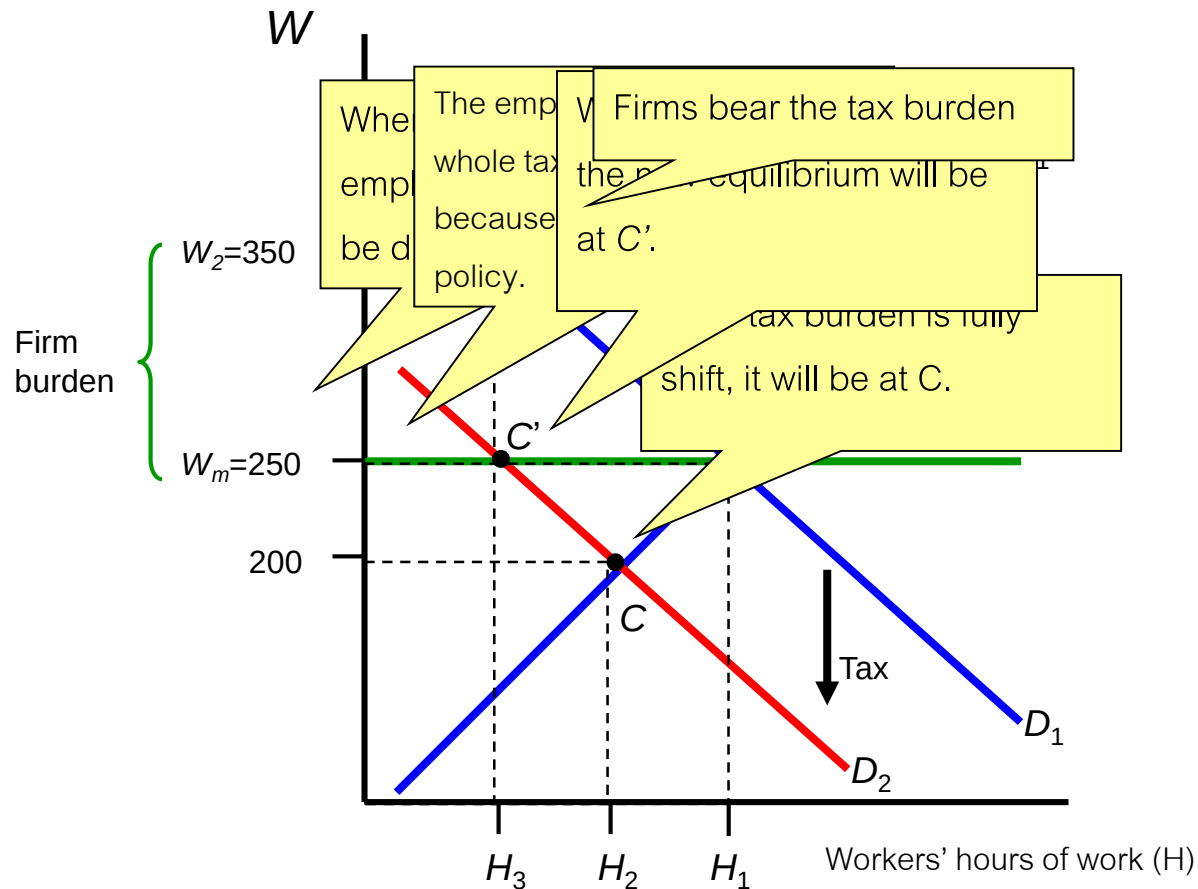
Tax burden: Impose taxes on factor market

- Impose tax on workers → labor supply curve shifts to the left (shifts up) because at every level of work, workers will need a higher wage to compensate for the taxes which they have to pay to the government.
- Workers get 300 baht but are forced to pay a tax of 100 baht.
- The tax burden will be the same as in the case of no minimum wage rate.

Tax burden: Impose taxes on factor market

- Impose tax on firms

Impose tax on firms



Tax burden: Impose taxes on factor market

- When the government imposes a tax on firms → demand for labor curve will shift downward. If no minimum wage, wage will be reduced from 250 to 200 and producers will have to pay tax another 50 baht. Work hours are reduced to H_2 .
- With minimum wage, the wage rate cannot be reduced. Firm will hire worker at $H_3 < H_2$. The wage rate is 250 baht and firm has to pay tax to the government 50 baht.
- The firm will bear the whole *economic burden*.

Tax burden: Impose taxes on factor market

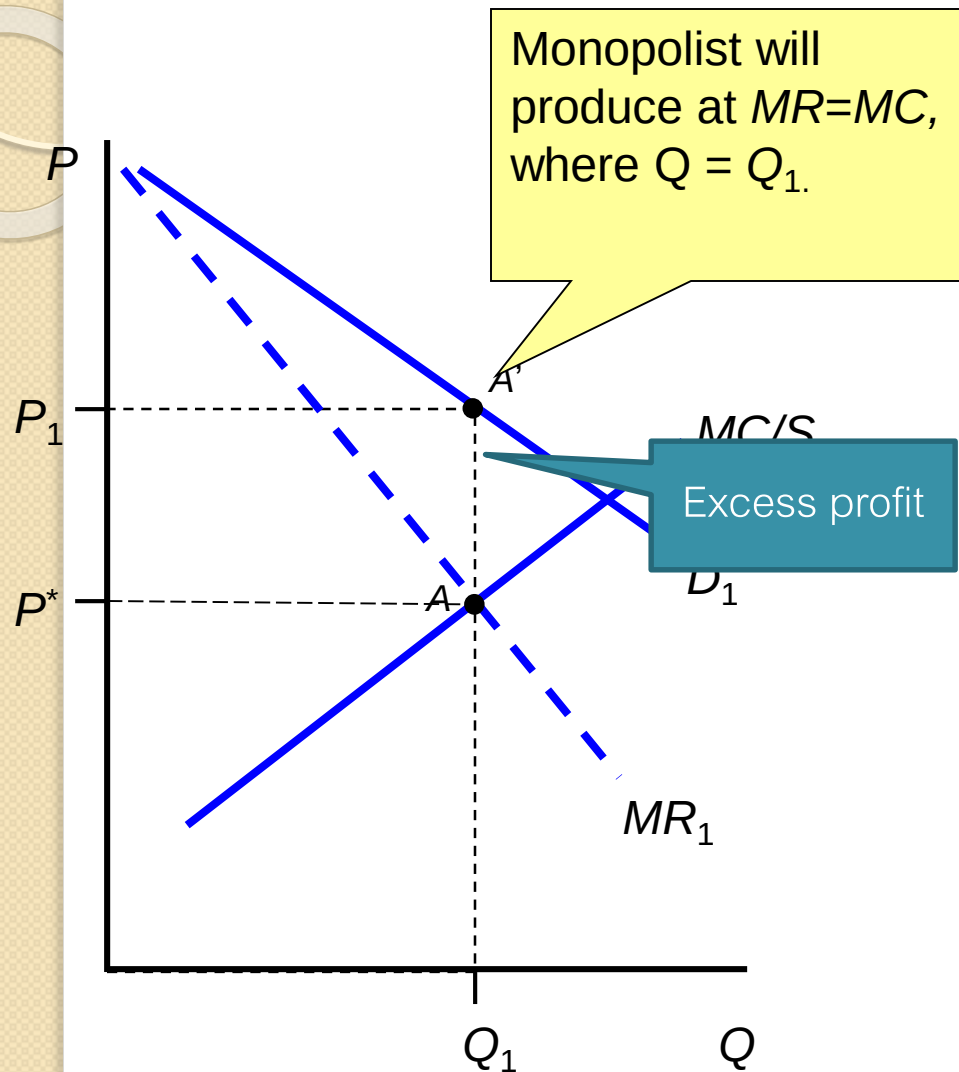
- If the factor markets are not competitive, the other conditions will influence tax burden shifting because wage rate cannot be adjusted to market mechanism.
- EX:
 - Minimum wage
 - Workplace norms
 - Rules and regulations of the labour unions such as number hours of work, welfare, etc.

Imposing taxes in imperfectly competitive markets

Monopoly markets

- Monopolists are price makers not price takers.

Monopoly market

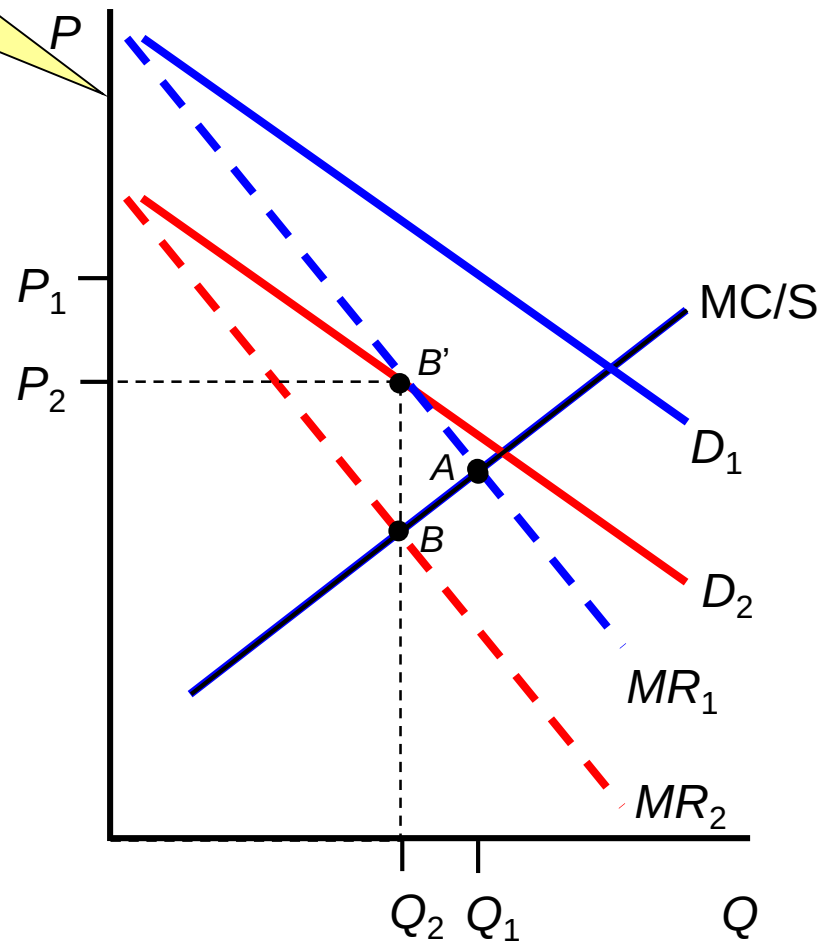


Tax burden in imperfectly competitive markets

- In this case, the monopolists are price makers, MR slopes downward (negative slope). Monopolists have to reduce the price for every unit in order to sell one more unit of their products.
- $MR_1 < \text{demand}$
- Condition for profit maximization: Firms will produce at $MR_1 = MC \rightarrow Q = Q_1 \rightarrow \text{maximize profit.}$

Impose tax on consumers in monopoly market

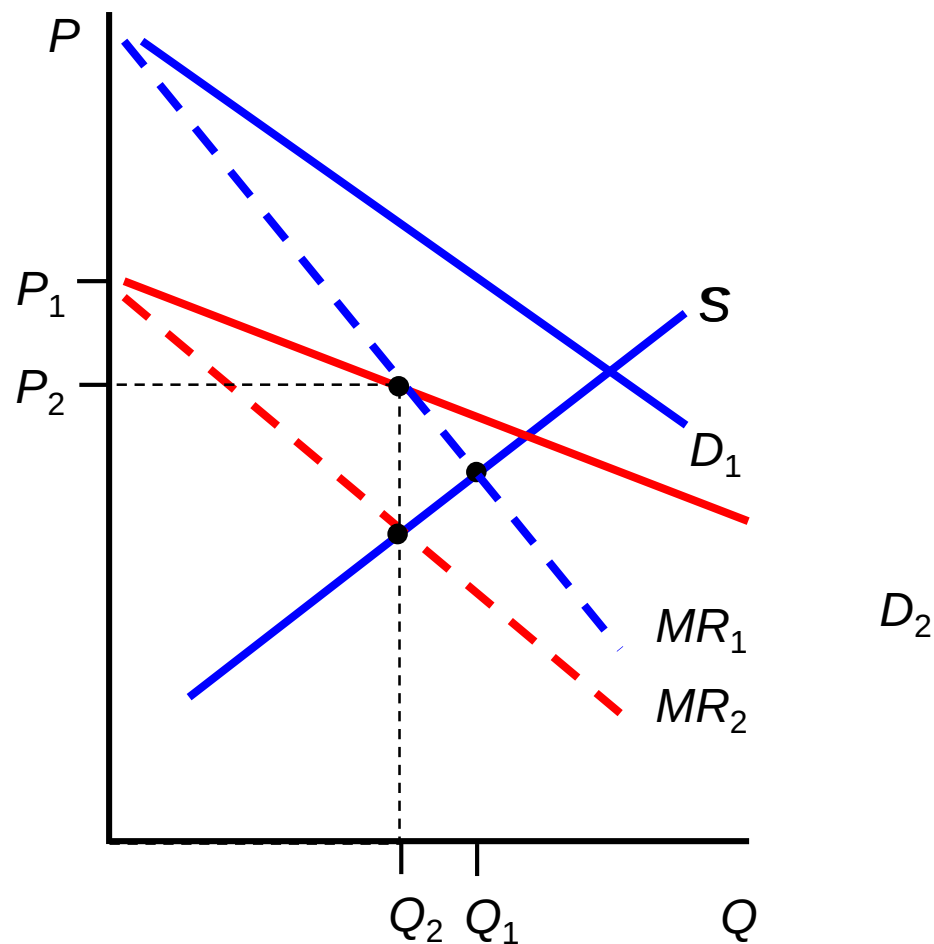
After tax: Both MR and demand curves will shift downward.



Tax burden in imperfectly competitive markets

- Impose tax on consumers:
 - Demand curve shifts to D_2 and MR shift to MR_2
- Profit maximization condition: $MR_2 = MC$.
- $Q = Q_2$
- Price will be changed from P_1 to P_2 .
- The monopolists have to bear some parts of the tax burden.

Impose tax on consumers in monopoly market: Ad valorem tax



Impose tax in imperfectly competitive markets

- Normally, most markets are somewhere between being perfectly competitive and monopolies.
- ***Oligopoly markets***
 - No conclusions about tax burden shifting. Most people believe that tax burden shifting also occurs in this market.
 - We do not have the conclusions because in oligopoly markets, we do not know exactly how to determine the prices. It depends on the interaction among sellers.
 - EX: Cartel → cooperate among sellers in order to maximize profits → OPEC.

Tax burden in imperfectly competitive markets

- Oligopoly market
 - Even though, in cartel all sellers can make some agreements but it is difficult to keep their promise. When **price increases**, sellers will have an incentive to break their agreement. Sellers will increase their production more than the agreement in order to increase their profit.
 - When the government imposes taxes, producers have to reduce their productions. Thus, profits decrease. But in this case, they have an agreement about their production, the producers may not be worse off after taxes. They MAY still be able to maintain their profits according to the agreement.

Profit Tax

- In the previous section, we analyzed a tax imposed on sales.
- In this section, we will analyze taxes imposed on economic profit (profit which is more than the opportunity cost of factors of production or excess profit).
- In a perfectly competitive market, producers will produce at $MC = MR$. The proportional taxation will not affect production level. Thus, producers will bear the full tax burden.

Tax burden and capitalization

- Assume that: Assets such as land will provide returns (rent) = R each year. The price of this piece of land should be equal to the total amount of returns on land.
- Thus,

$$P_r = R_0 + \frac{R_1}{1+r} + \frac{R_2}{(1+r)^2} + \frac{R_3}{(1+r)^3} + \dots + \frac{R_T}{(1+r)^T}$$

Tax burden and capitalization

- If the government imposes tax = u each year.
- Price of the asset will be changed to

$$P_r = (R_0 - u_0) + \frac{(R_1 - u_1)}{1+r} + \frac{(R_2 - u_2)}{(1+r)^2} + \frac{(R_3 - u_3)}{(1+r)^3} + \dots + \frac{(R_T - u_T)}{(1+r)^T}$$

- The price of the asset will be reduced by (because of tax)

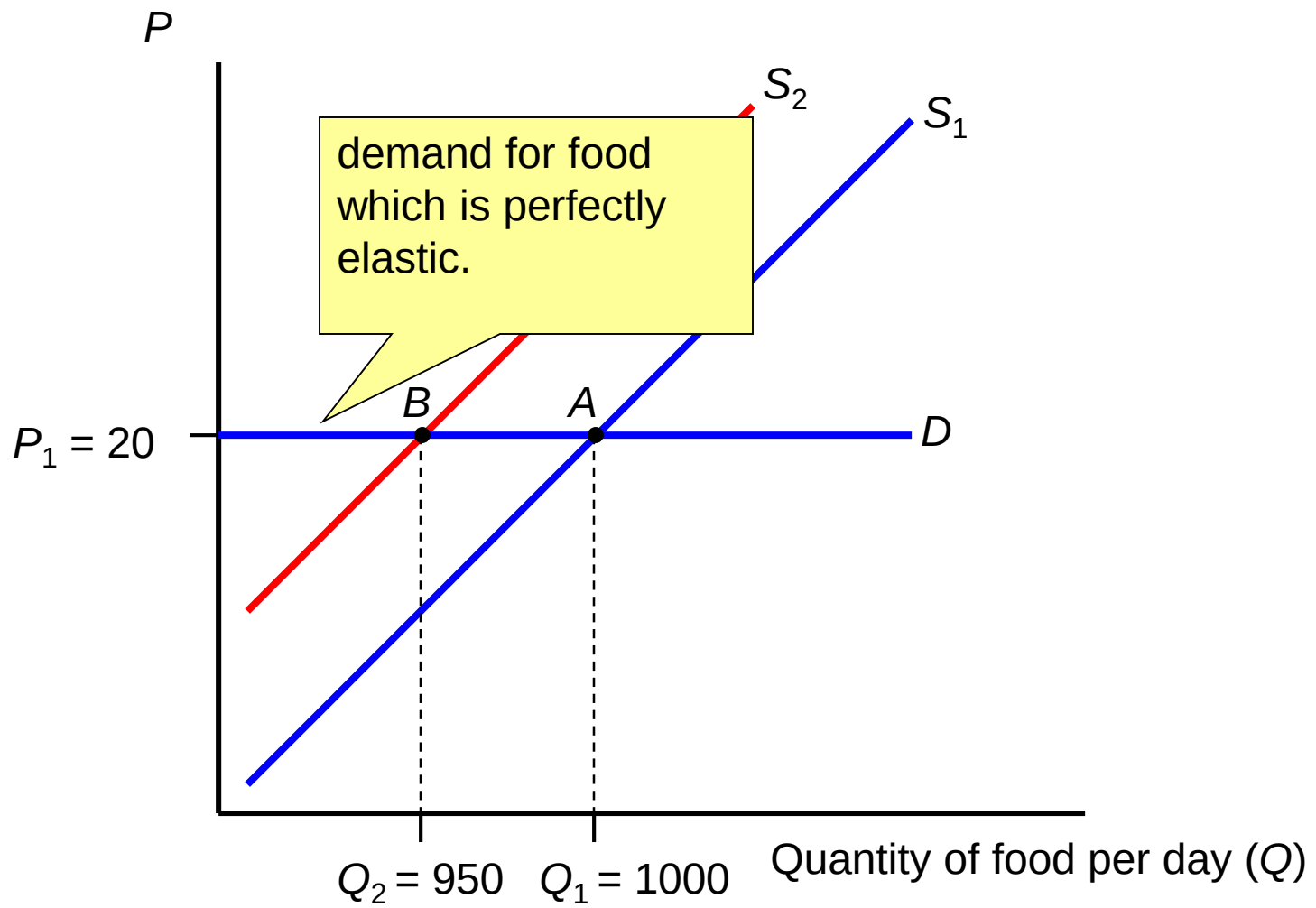
$$u_0 + \frac{u_1}{1+r} + \frac{u_2}{(1+r)^2} + \frac{u_3}{(1+r)^3} + \dots + \frac{u_T}{(1+r)^T}$$

General Equilibrium

- Previous sections covered so far were of partial equilibrium.
 - *Partial equilibrium tax incidence*: the analysis in each market.
- In real world, the effects from taxation will disperse across markets so we will need general equilibrium analysis.

GE analysis: Impose tax on producers

- Suppose that the government imposes taxes on seller faced with elastic demand curves.



GE analysis: Impose tax on producers

- Impose tax on producers. → Supply shifts to the left.
- Consumers have a lot of choices. → Producers bear the full tax burden.
- Normally, producers will use both labour and capital for their factors of production.

GE analysis: Impose tax on producers

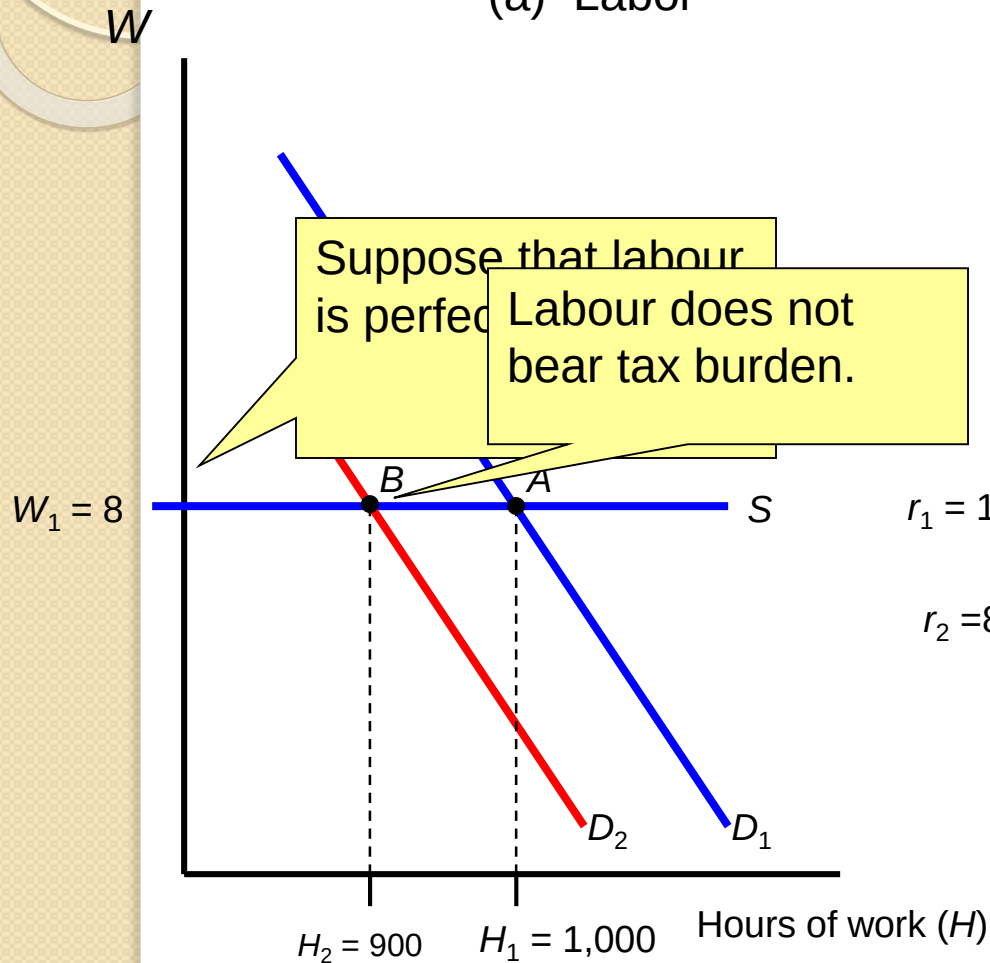
- When the government imposes taxes on producers who cannot shift their tax burden to the consumers, the tax burden will be shifted to factors of production (labor and capital).

From factors of production market

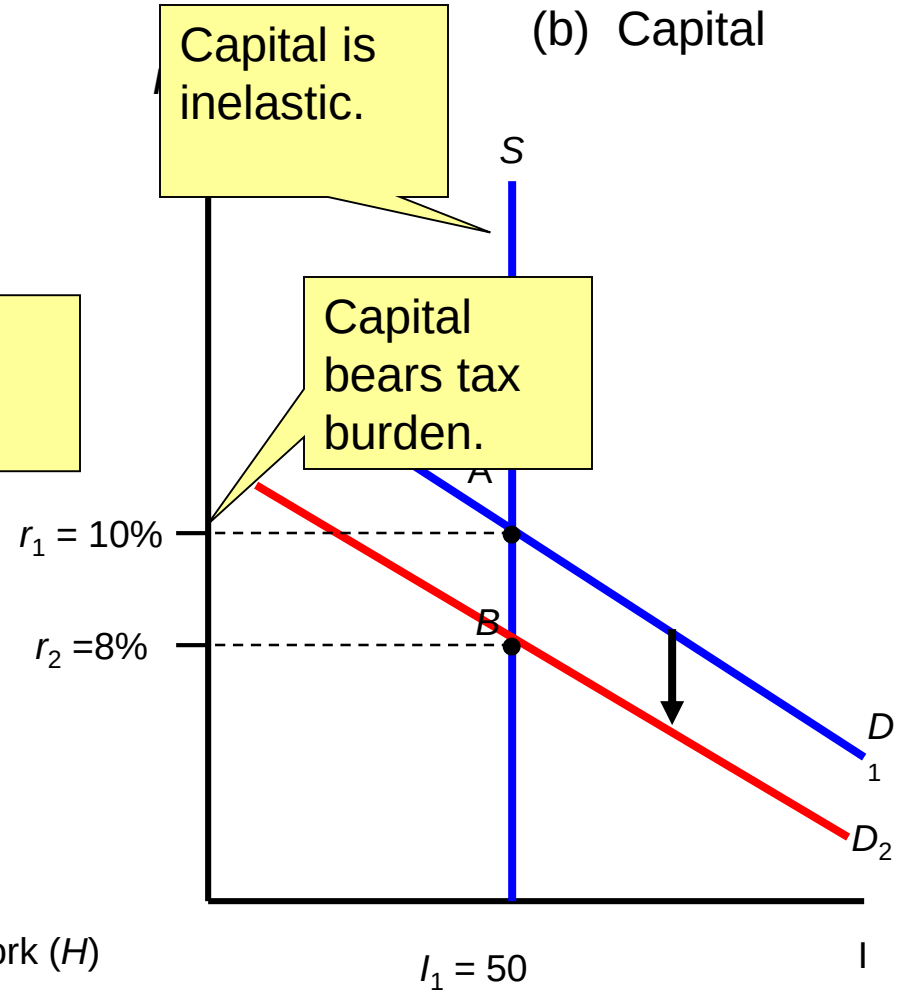
- Assumptions:
 - High elasticity of labour supply (easy to find substitute jobs).
 - Capital market in short run, capital is inelastic because it is difficult to give or receive loans in the market.

Tax burden shifted backward to labour and capital.

(a) Labor



(b) Capital



GE analysis: Impose tax on producers

- When the government imposes taxes on markets which have elastic demand, producers will shift the tax burden backward by reducing employment and capital usage.
- In the labour market, the supply of labour is elastic (high labour movement), so producers have to reduce employment but cannot reduce the wage rate.
 - Labour will bear none of tax burden.
- At the same time, in the short run the capital market, the supply of capital is fixed or limited, when demand for capital decreases, capital owners will reduce the returns to capital.
 - In the short run, when capital is limited, the capital owners have to bear tax burden with the producers so the capital owners will bear the full tax burden.

Notes on GE incidence analysis

- In the long run, the supply of capital is more elastic.
 - Producers may close their business and move into other, non-taxed businesses.
 - In the long run, capital may be perfectly elastic. It may not have to bear any tax burden instead of producers.

Notes on GE incidence analysis

- If we suppose that in the long run, both labour and capital are perfectly elastic. Who will bear the real tax burden?
- Another factor of production is land which is inelastic.
 - The amount of land is fixed or limited.
 - While labour and capital can avoid taxes, for land, the only way that producers can reduce their tax burden is reducing their rent.

Notes on GE incidence analysis

- The scope of tax collection will determine the distribution of tax burden.
- EX: The government imposes taxes on all industries VS on some specific areas.
- Demand in market has no choices because the consumers in every market have to pay taxes. Thus, the demand is inelastic, the consumers have to bear some tax burden.
- If labour supply also inelastic, labour also has to bear the tax burden.

Notes on GE incidence analysis

- The scope of tax collection will determine tax burden shifting.
- The elasticity of demand and supply will influence the analysis results.

EX:

Wider tax base $\rightarrow$ less tax avoidance

Narrow tax base $\rightarrow$ smaller numbers of producers and consumers who have to pay taxes $\rightarrow$ bear more tax burden (less elastic).

Notes on GE incidence analysis

- GE analysis shows us the effects on goods in all markets not just factor markets of that particular product.
- Imposing a tax $\rightarrow$ price increases:
 - Effects on consumers
 - Switch to substitute goods
 - Reduction in the consumption of complimentary goods of the taxed product

The relationship of types of taxation under GE analysis

- Assumptions: 2 products market and 2 factors of production market.
 - Products: F and M
 - Factors of production: L and K

The relationship of types of taxation under GE analysis

- t_{KF} = impose tax on capital which used in producing product F
- t_{KM} = impose tax on capital which used in producing product M
- t_{LF} = impose tax on labour which used in producing product F
- t_{LM} = impose tax on labour which used in producing product M
- t_F = impose tax on product F
- t_M = impose tax on product M
- t_K = impose tax on factor K
- t_L = impose tax on factor L
- t = impose tax on income

The relationship of types of taxation under GE analysis

t_{KF}	and	t_{LF}	equivalent to	t_F
and		and		and
t_{KM}	and	t_{LM}	equivalent to	t_M
equivalent to		equivalent to		equivalent to
t_K		t_L	equivalent to	t

Harberger Model

- Arnold Harberger (1974)
- Assumptions are:
- **Technology of production:**
 - Constant return to scale
 - Producers can have different production technologies (different intensities of L and K, can substitute between L and K which depends on elasticity of substitution between factors of production).
- **Behavior of factors of production's owners:**
 - Factors of production can be moved freely (zero transaction costs) and maximize profit. Finally, MP_L and MP_K of both industries will be equal and has no more movement of factors of production between industries.

Harberger Model

- Suppose that market structure is competitive with perfect information in both product prices and returns of factors of production. Everyone will maximize profits. Prices freely adjust. The market is at fully employed. The returns of every factor of production = VMP of that factor of production.
- The amount of factors of production is fixed.
 - $L_F + L_M = L$
 - $K_F + K_M = K$
- Consumers' preference: Consumers have the same preference. No effects on uses of income. No effects on income distribution.
- Framework of tax burden analysis: Substitute one type of tax with another type of tax in order to get rid of the effect of the increasing in income on demand for goods and prices of factors of production.

Impose tax on product F (t_F)

- When the government imposes tax on any goods $\rightarrow$ the comparative price of that product increases relative to other goods by the amount of the tax.
- Assume that the government imposes a tax on product F.
- Suppose that consumers substitute F with product M.
- Producers produce less F and more M. $\rightarrow$ Demand for factor of production in F production is decreased but demand for factor of production in M production is increased.
- F is labor intensive while M is capital intensive.
- After imposing tax on F, demand for labour producing F is decreasing. M will be able to absorb labour from F if labour reduces their wages by a lot, including labour for producing M.

Impose tax on product F (t_F)

- All labour in the economy have to bear tax burden from imposing tax on product F.
- How much tax burden that labour have to bear depends on:
 - Price elasticity of product F and M.
 - The difference in intensity of factors of production among producers.
 - Elasticity of substitution between factors of production.
- When imposing tax on product F, people who earn income by supplying labour to produce either F or M will bear most of tax burden.
- Consumers of product F will also bear part of the tax burden.

Imposing income tax (t)

- Equivalent to imposing a tax on both factors of production at the same time.
- **Results:** Everyone will bear the same amount of tax burden, no tax burden shifting. The size of tax burden will be in the same proportion because the amount of factors of production is fixed.

Imposing tax on factor of production, labour (t_L)

- Labour in all production will have to bear the tax burden because imposing taxes on labour in both F and M production.

Partial factor tax (t_{KM})

- 2 effects:
 - Output effect: price of M increased $\rightarrow$ M production decreased because demand for product M decreased.
 - Factor substitution effect: substitution between factors of production because price of K in producing M is relatively increased. M producer will substitute K with L.

Tax induces an increase in cost of capital in M sector

Output effects

substitution effects

Relative price of M rises

If M is labor intensive,
relative price of K rises

If M is capital intensive,
relative price of K falls

If substitution is possible ,
relative price of K falls

Relative price of K falls

Change in relative price of K is ambiguous.



Mathematics for tax burden calculation



The analysis of size of tax burden from changing in tax collection and the effects on prices.

Example

- Suppose that the government impose tax on consumer
= τ baht.

- Price is changed to

$$\text{total price} = \Delta P + \tau$$

- The change in price in the market = ΔP
- The calculation of price change is as follows:

Example

- 1st step
- Determine price elasticity of demand and supply of product.

- elasticity of demand = η_d

- $$\eta_d = \frac{\Delta Q}{\Delta P + \tau} * \frac{P}{Q}$$

- while
$$\eta_s = \frac{\Delta Q}{\Delta P} * \frac{P}{Q}$$

Example

- 2nd step
- Rearrange the terms.

$$\eta_s * \frac{\Delta P}{P} = \frac{\Delta Q}{Q} = \eta_d * \frac{(\Delta P + \tau)}{P}$$

Example

- 3rd step

- $\rightarrow \eta_s * \frac{\Delta P}{P} = \eta_d * \frac{(\Delta P + \tau)}{P}$

- $\rightarrow$

$$\Delta P = \left[\frac{\eta_d}{\eta_s - \eta_d} \right] * \tau$$

Example

Imposing tax on consumers

From equation,

$$\Delta P = \left[\frac{\eta_d}{\eta_s - \eta_d} \right] * \tau$$

we will find the importance of price elasticity on price determination for both the consumer and producer side.

If η_d is inelasticity or $\eta_d = 0$, $\Delta P = 0$. Consumer price will be the same because consumers are the ones who pay tax to the government. The consumers will bear full tax burden.

Example

From equation,

$$\Delta P = \left[\frac{\eta_d}{\eta_s - \eta_d} \right] * \tau$$

If η_d is elastic or $\eta_d = \infty$, so $\Delta P = -\tau$

Consumer price will be decreased because consumers are the ones who pay tax to the government. Producers reduce the price equals to the amount of tax. If producers do not reduce the price, consumers will buy the substituted goods. Producers will bear full tax burden.

Example

- Imposing tax on producers, the equation will be

$$\Delta P = \left[\frac{\eta_s}{\eta_s - \eta_d} \right] * \tau$$

- Analyze the same way as imposing tax on consumers.

Monopoly market

- Can find price level and tax burden from marginal cost of production curve (supply curve) of the monopolists.
- EX: Given $C = 12 + q^2$
- Demand: $P = 24 - q$
- At the equilibrium: $MC = MR$
- Total revenue (TR) = $P \cdot q = 24q - q^2$
- $MR = 24 - 2q$ and $MC = \Delta C / \Delta q = 2q$
- At $MC = MR \rightarrow 24 - 2q = 2q$
- Maximize profit: $q = 6$ units and $p = 24 - 6 = 18$ baht.

Monopoly market

- Government imposes tax 4 baht per unit.
- Cost function is
- $C = 12 + q^2 + 4q$
- $MC = 2q + 4$
- Maximize profit: $q = 5$ units and $p = 24 - q = 19$ baht

Monopoly market

- The monopolist has to bear tax burden by reducing their sales from 6 units at 18 baht to 5 units at 19 baht.
- The monopolist will shift 1 baht tax burden to consumers and will themselves bear a tax burden = 3 baht (from 4 baht).