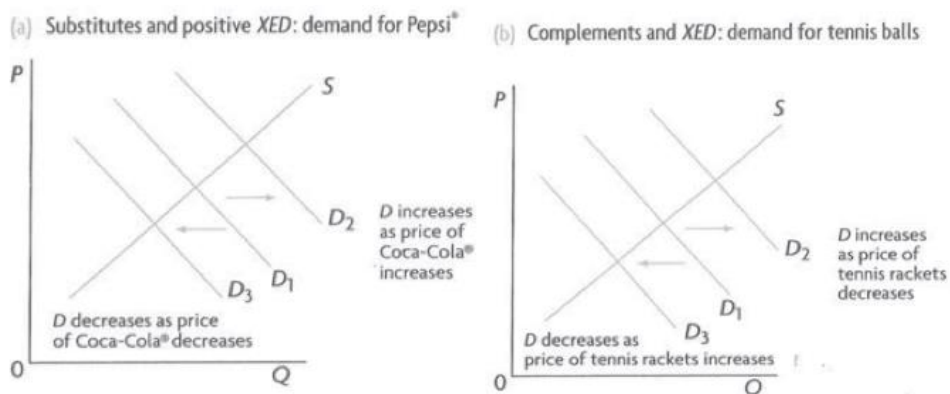


Graphs for Cross Price Elasticity:



- Substitutes are produced by rival firms
- Substitutes and mergers between firms: Two firms that produce substitute goods sometimes merge (come together to form a new firm) to decrease competition and to increase customer base.

Income Elasticity of Demand (YED)

YED shows the relationship between the percentage change in quantity demanded of a good, X, and the change in income.

Equation:

YED = (percentage change in quantity demanded) / (percentage change in income)

Important factors	Explanation
The sign (+) or (-) or (0) as the answer	• (+) Value (YED > 0) means that the good being considered is a normal good. ◦ Both change in the same direction • (-) Value (YED < 0) means that the good being considered is an inferior good. ◦ As one increases, the other decreases
The value of YED	• YED < 1 : Necessities. If a good has a YED that is positive but less than one, it has income inelastic demand. ◦ A small increase in income produces a smaller percentage increase in quantity demanded. • YED > 1 : Luxuries. If a good has a YED greater than 1, it has income elastic demand. ◦ Percentage increase in income produces a larger percentage increase in quantity demanded.

Price Elasticity of Supply

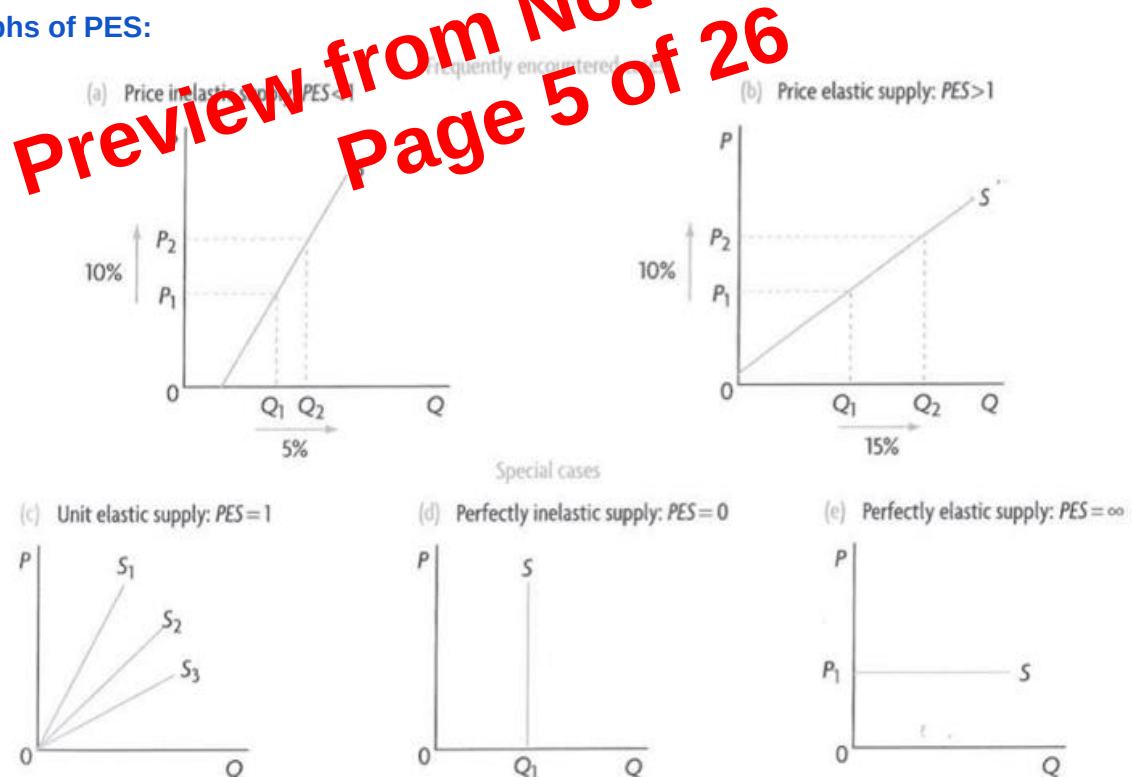
PES measures the responsiveness of the quantity of a good supplied to changes in its price.

Equation:

$PES = (\text{percentage change in quantity of good X supplied}) / (\text{percentage change in price of good X})$

Value of PES	Classification	Interpretation
$0 < PES < 1$	Inelastic supply	Quantity supplied is relatively unresponsive to price
$1 < PES < \infty$	Elastic supply	Quantity supplied is relatively responsive to price
$PES = 1$	Unit elastic supply	Percentage change in quantity supplied equals percentage change in price
$PES = 0$	Perfectly inelastic supply	Quantity supplied is completely unresponsive to price
$PES = \infty$	Perfectly elastic supply	Quantity supplied is infinitely responsive to price

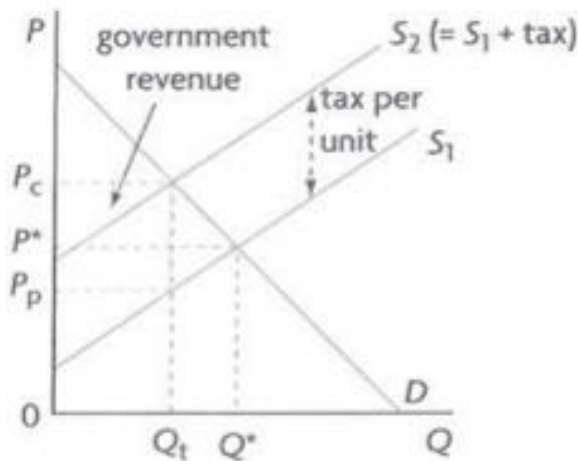
Graphs of PES:



Impacts of market outcomes of these taxation types:

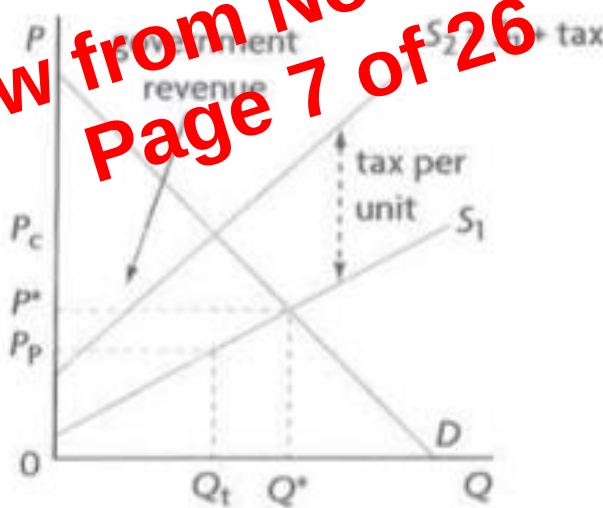
Specific Tax:

(a) Market outcomes: specific tax



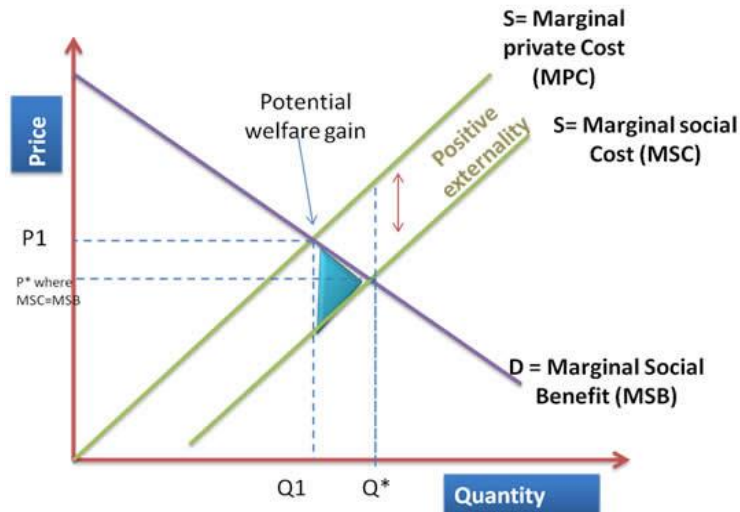
Ad Valorem Tax:

(b) Market outcomes: ad valorem tax



Explanation of the Market Outcomes of Ad Valorem and Specific Tax:

- Equilibrium quantity produced and consumed falls from Q^* to Q_t
- Equilibrium price increases from P^* to P_c for consumers
- Consumer expenditure changes from $P^* \times Q^*$ to $P_c \times Q_t$
- Price received by firms fall from P^* to P_p
- Firm's revenue falls from $P^* \times Q^*$ to $P_p \times Q_t$
- Government receives tax revenue of $(P_c - P_p) \times Q_t$
- Underallocation of resources to the production of the good ($Q_t < Q^*$)



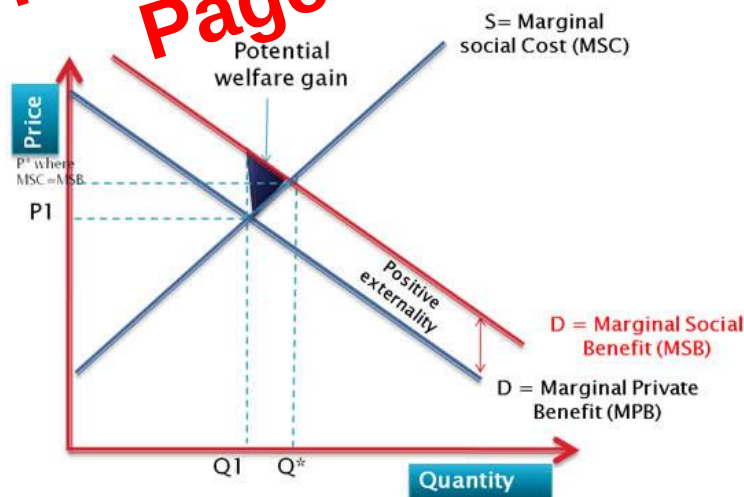
- Current: Q_1 & P_1
- Social optimal: Q^* & P^*
- There is an under allocation of merit goods/services.
- There is a potential welfare gain that may arise if the market failure were to be corrected.

To fix:

- Direct government provision
- Subsidies

Consumption

Consumption of the good/service provides external benefits to third parties.



- Current: Q_1 & P_1
- Social optimal: Q^* & P^*
- $MSB > MPB$ there are external benefits to consumers because of the provision of merit goods.
- There is an under consumption of merit goods, the amount shown between Q_1 and Q^* .