2.7 Role of government in microeconomics

Learning objectives

2.7 Role of government in microeconomics	Depth	Diagrams & calculations
Reasons for government intervention in markets Influencing market outcomes in order to: • earn government revenue • support firms • support households on low incomes • influence level of production • influence the level of consumption • correct market failure • promote equity.	AO2	

Learning objectives

2.7 Role of government in microeconomics	Depth	Diagrams & calculations
Main forms of government intervention in markets • Price controls: price ceilings (maximum prices) and price floors (minimum prices) • Indirect taxes and subsidies • Direct provision of services • Command and control regulation and legislation • **Consumer nudges (HL only)**	AO2 AO4	Diagram: showing the following measures and the possible effects on markets and stakeholders • Price ceiling (maximum price) • Price floor (minimum price) • Indirect tax • Subsidy

Learning objectives

2.7 Role of government in microeconomics	Depth	Diagrams & calculations
		Calculation (HL only): the effects on markets and stakeholders of: • **price ceilings (maximum prices) and price floors (minimum prices)** • **indirect taxes and subsidies.**
Government intervention in markets – consequences for markets and stakeholders	AO3	

Real world example – watch from 2:06 to 6:20

1. What forms of government intervention are seen in the Chinese electric vehicle market?
2. Explain the potential reasons behind the government's intervention.

Reasons for government intervention

1. Earn government revenue
2. Support firms
3. Support households on low incomes
4. Influence the level of production
5. Influence the level of consumption
6. Correct market failure
7. Promote equity

Reasons for government intervention

Earn government revenue

Government revenue may come from various sources of intervention:

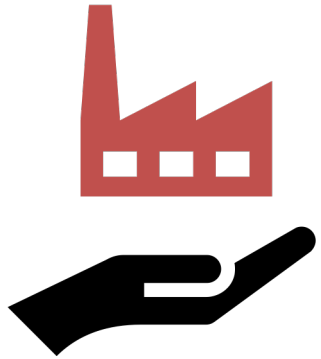
- Tax revenue from indirect or direct taxes
- State-owned enterprises
- Privatization
- Sovereign wealth funds
- Public sector borrowing

Reasons for government intervention

Support firms

The government may offer support to firms for various reasons:

- Subsidies to lower their production costs and encourage output
- Protecting domestic infant industries (more details in unit 4.2)
- Research and development funding
- Business development loans
- Tax concessions



Reasons for government intervention

Support households on low incomes

Free markets lead to unequal income distribution. Government intervention can help to support the basic needs of low-income groups and to reduce excessive income inequality with policies such as education subsidies, progressive taxes, and transfer payments.

Reasons for government intervention

Influence the level of production and consumption

Government intervention is used to increase the production and consumption of socially desirable goods, such as infrastructure, education, and healthcare.

Similarly, policies may also be imposed to decrease the production and consumption of socially undesirable goods, such as tobacco products and alcohol.

Reasons for government intervention

Correct market failure

Government intervention takes place when the market fails to allocate resources efficiently. Intervention may involve:

- Provision of public goods
- Decrease in production and consumption of demerit goods
- Increase in production and consumption of merit goods
- Reduction in monopoly power

Reasons for government intervention

Promote equity

Equity refers to the condition of being fair and just. Government intervention may be required to ensure equitable opportunities for different economic stakeholders. This may involve:

- Anti-discrimination laws and regulations
- Progressive taxation to reduce excessive income inequalities
- Transfer payments made to vulnerable groups

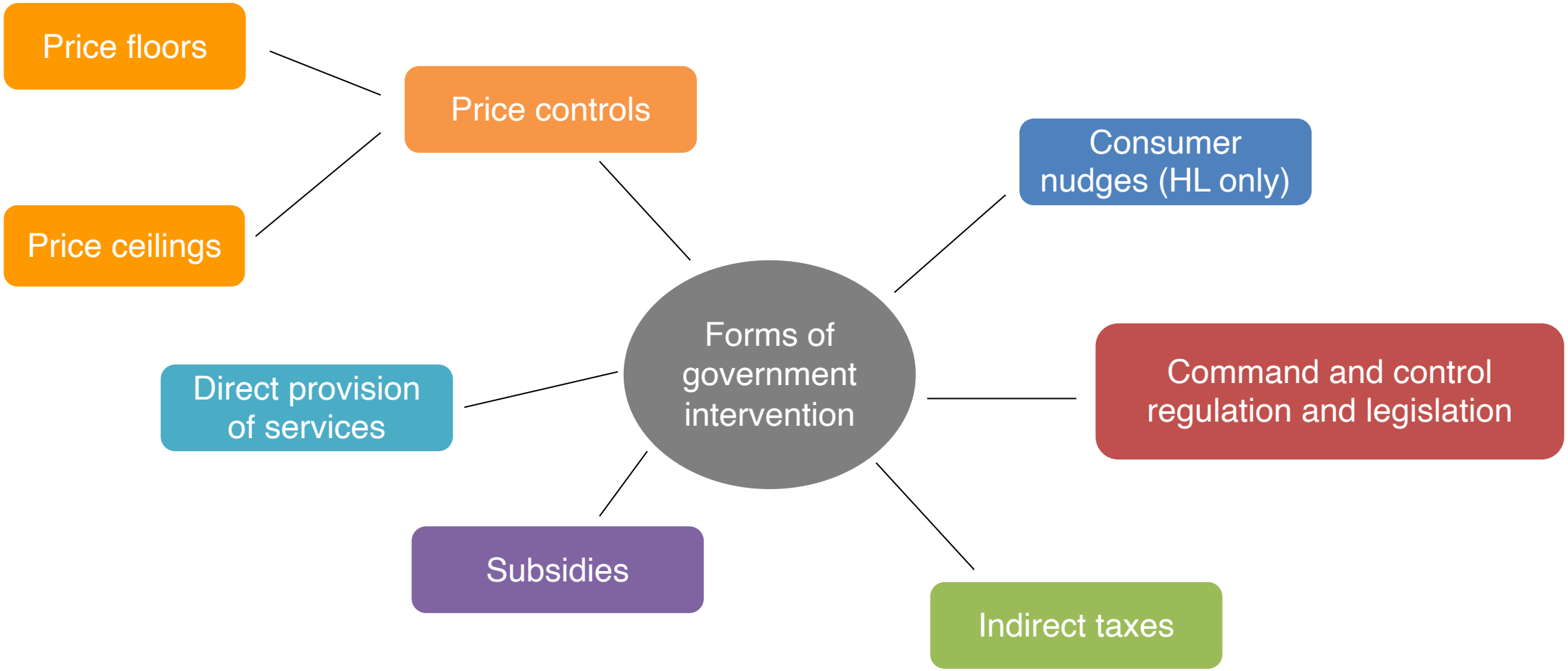
Real world example

Article: Luxembourg to Make All Public Transportation Free

Brainstorm potential reasons why Luxembourg's government may wish to provide free public transportation.

Forms of government intervention

Forms of government intervention



Price controls

Price controls are a form of government intervention that sets a maximum or minimum price that producers can charge for certain goods or services.

Price controls – Price ceiling

A **price ceiling** is the legal maximum price set by the government for a particular good or service to make goods (such as food and rent) more affordable, especially for low-income consumers.

Real world example

Article: A Glimpse of the Past — Price Controls in Venezuela

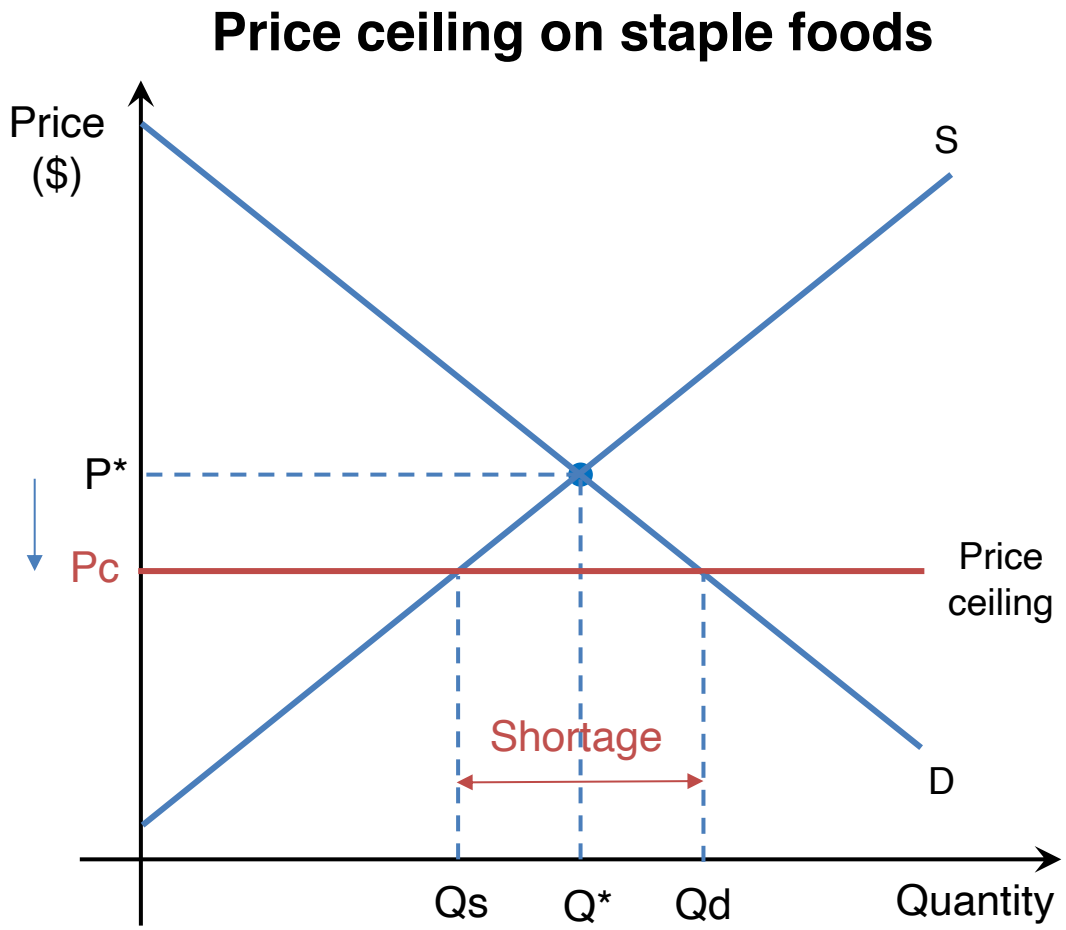
1. Why was a price ceiling imposed on all staple food items?

2. Why might a price ceiling lead to shortages of food?

3. What does a *black market* refer to?

4. According to the article, how might a price ceiling encourage black markets?

Price ceiling – market impacts

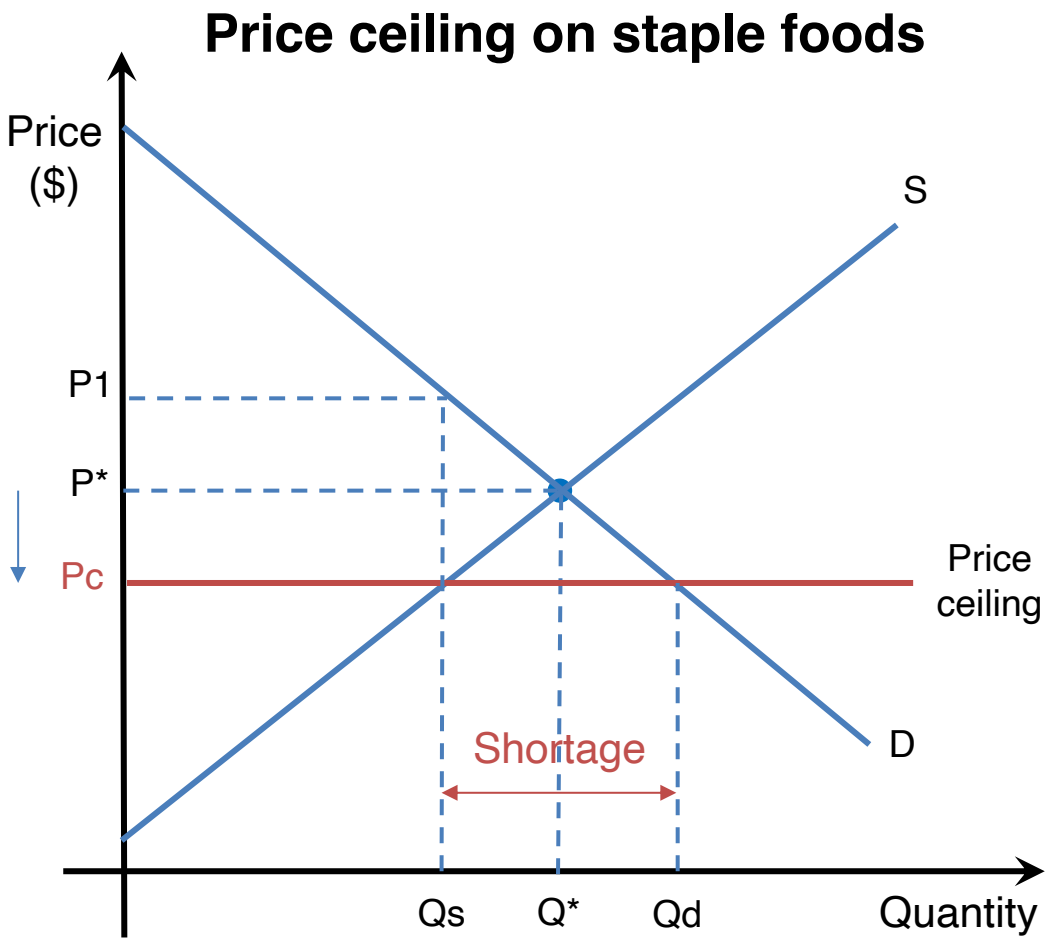


A price ceiling (Pc) is set below equilibrium price (P*).

- Quantity supplied contracts (from Q* to Qs)
- Quantity demanded expands (from Q* to Qd)
- A **shortage** of Qd – Qs arises in the market.

What are the potential consequences of a shortage of staple foods?

Price ceiling – market impacts

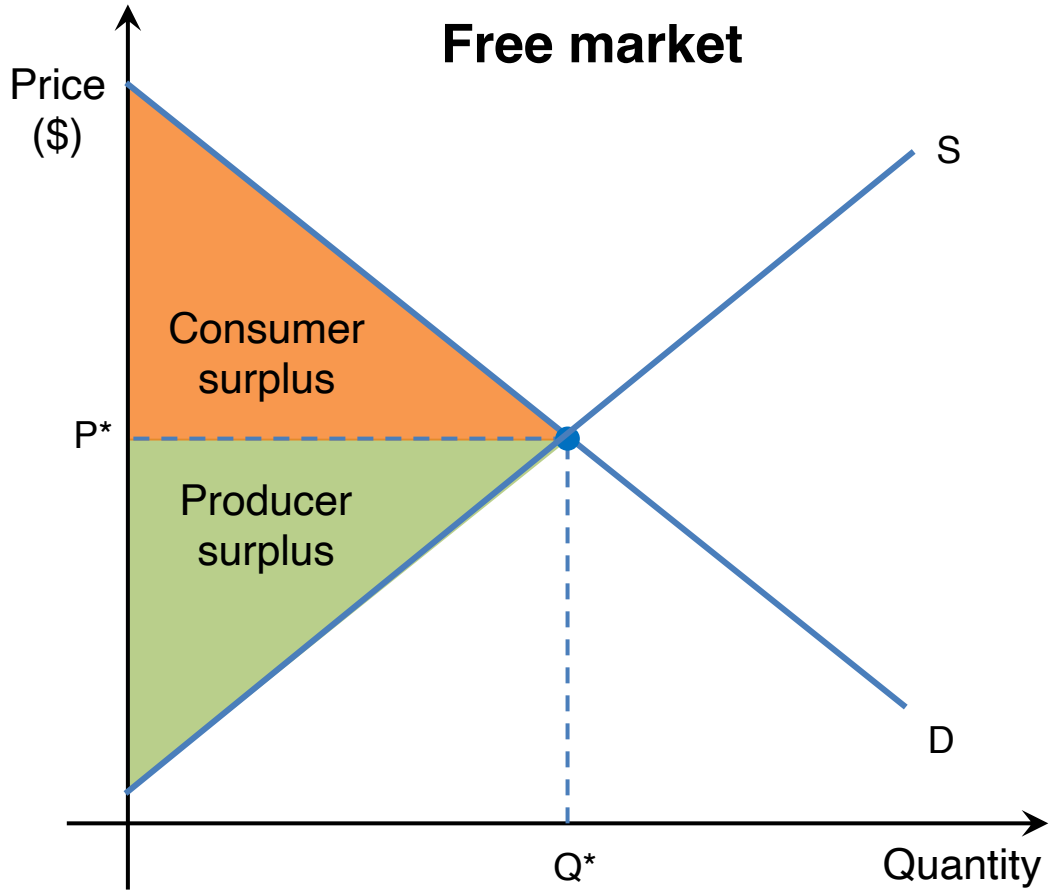


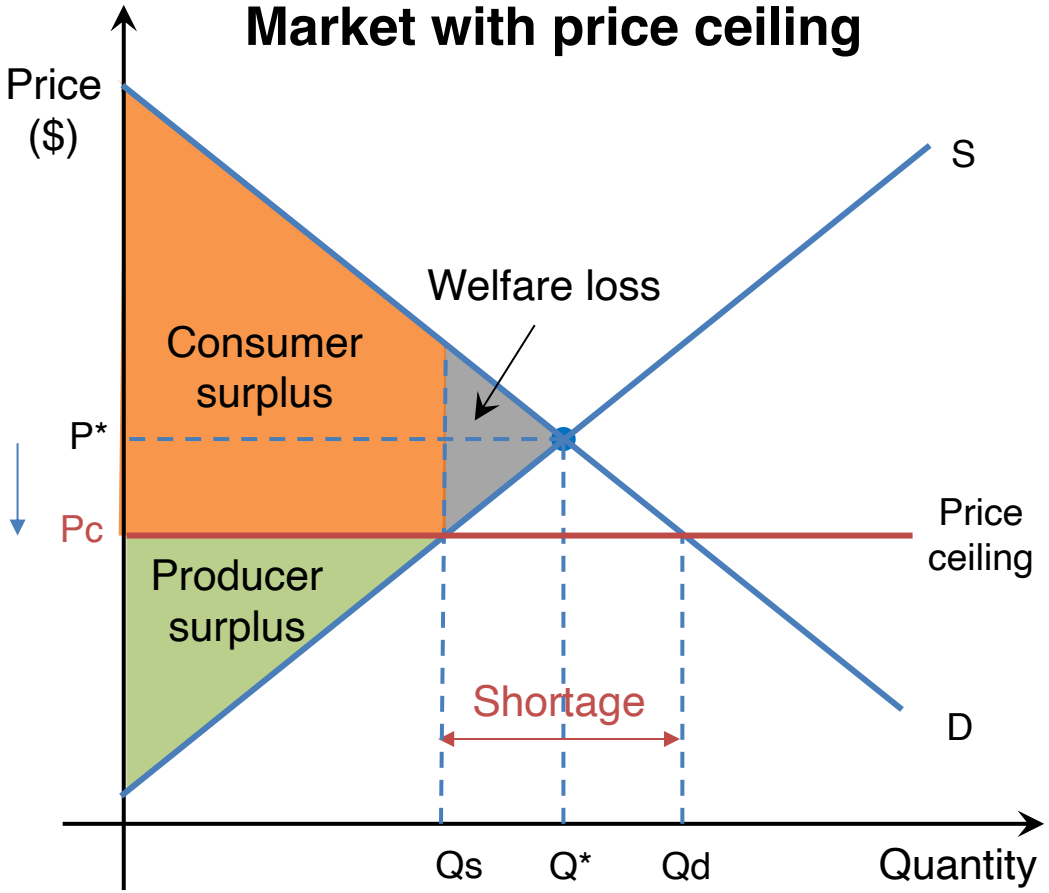
The shortage encourages the emergence of **black markets.**

Some buyers may purchase the good at Pc and resell the good at a higher price (P1) in the black market for a profit.

What problems might arise from trading in black markets?

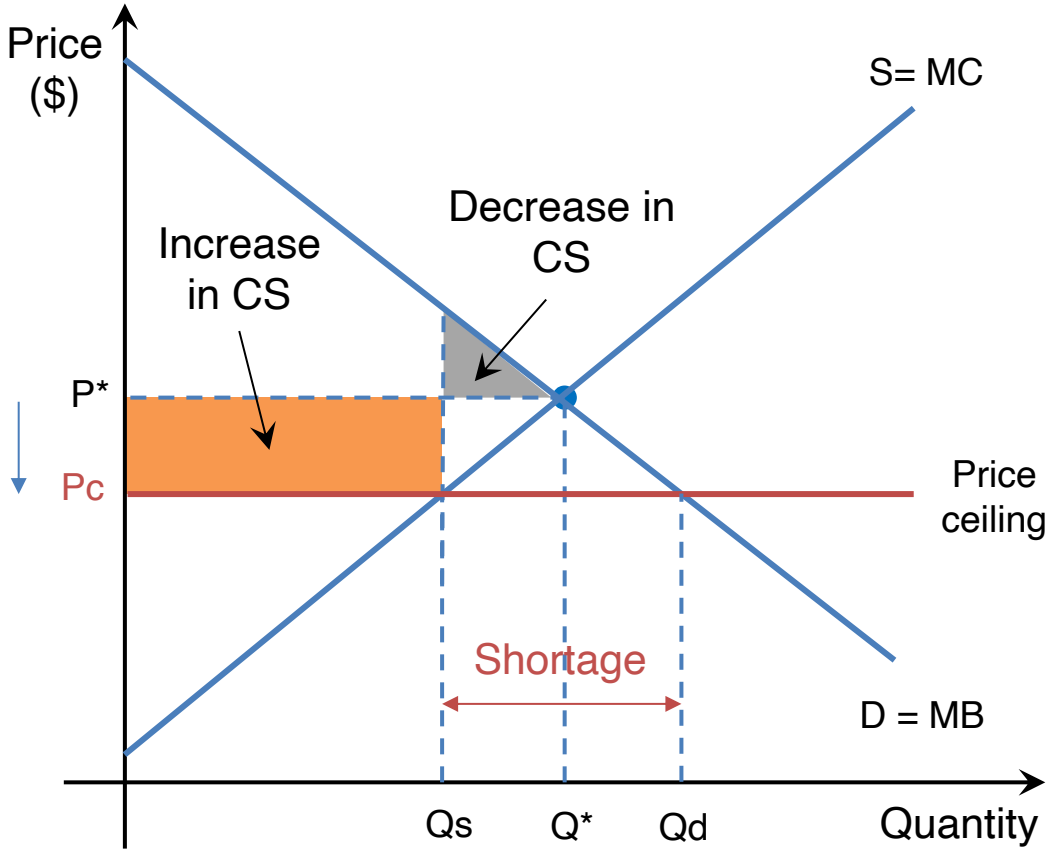
Price ceiling – impacts on stakeholders





Price ceiling – impacts on stakeholders

Price ceiling on staple foods

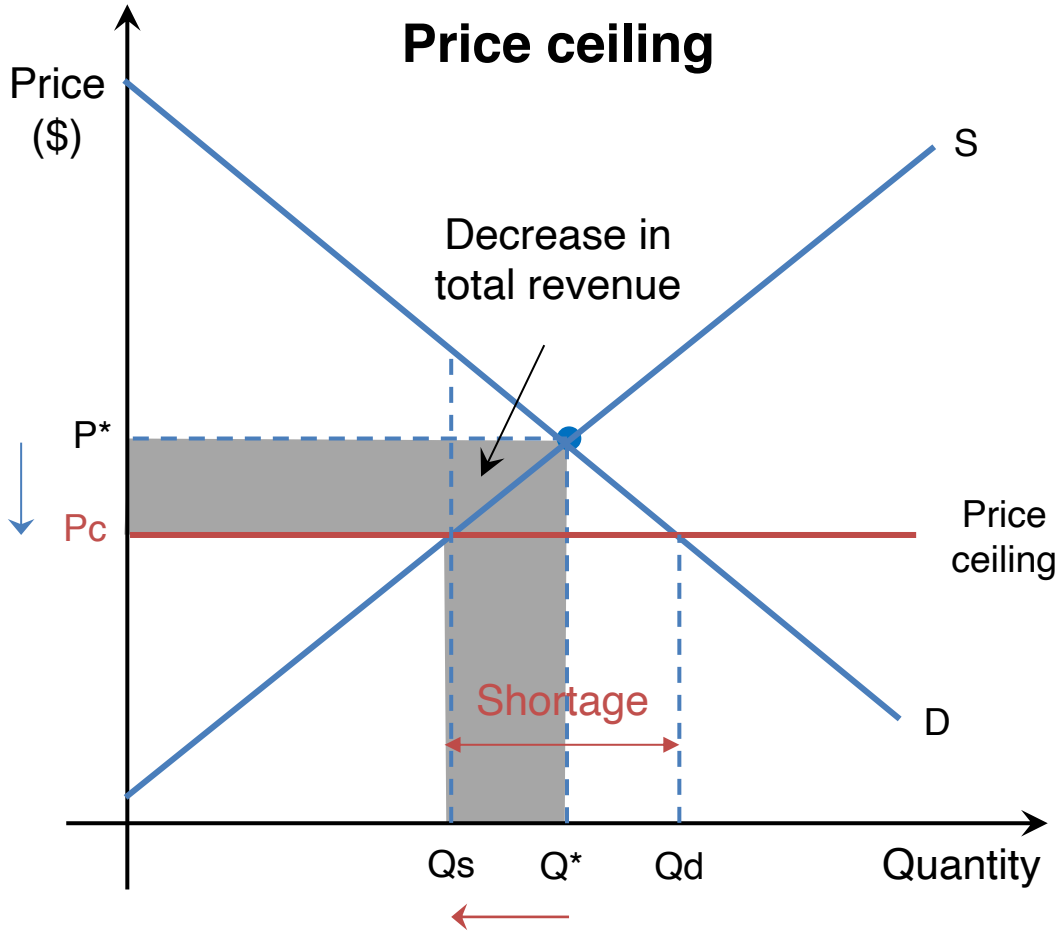


Consumers

- Pay a lower price (from P* to Pc).
- Consume lower quantities (Q* to Qs).
- Some consumers who can obtain the good at the lower price are better off.
- Some consumers who are unable to obtain the good are worse off.

The net change of consumer surplus depends on the relative PED and PES, and the size of the price ceiling.

Price ceiling – impacts on stakeholders



Producers

- Sell at a lower price (P* to Pc).
- Sell lower quantities (Q* to Qs).
- Total revenue decreases (P*Q* to PcQs)
- Producer surplus decreases.

Workers

- Decrease in output reduces the demand for labour.

Government no direct effect.

Real world example 1 - Rent control in New York City

1. How might rent controls affect the quantity demanded and supplied of rental properties?
2. How might rent controls affect the quality of rental properties?

Real world example 2 – Gasoline in US

In the 1970s, the global price of crude oil tripled, which led US President Richard Nixon to impose a price ceiling on gasoline.

Article: History 101: Price controls don't work

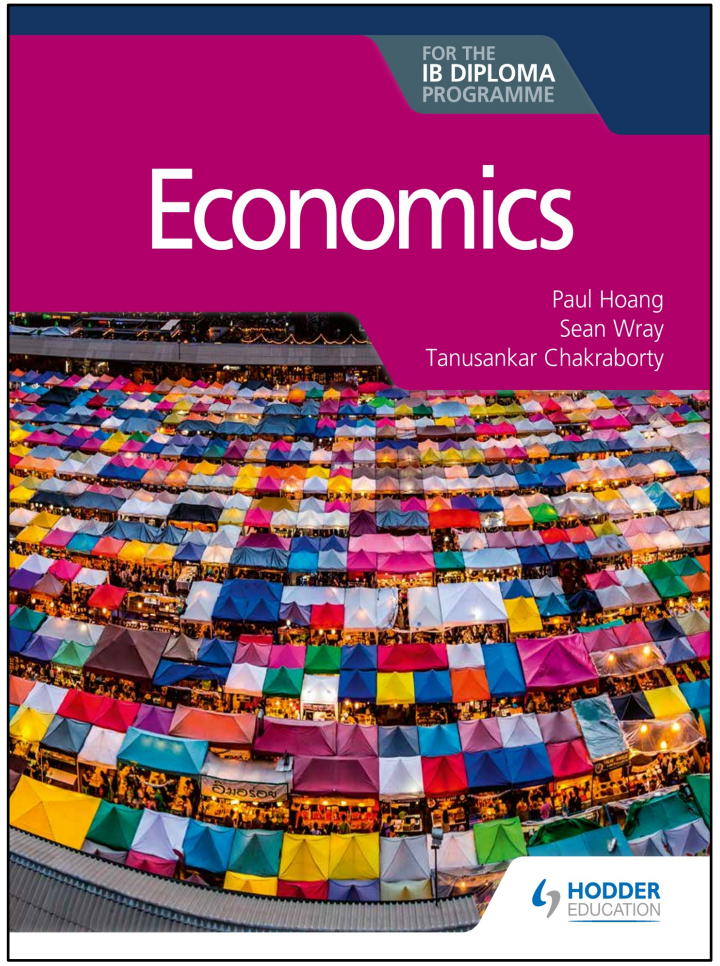
1. Why were there long queues at gasoline stations?
2. What might be examples of welfare loss to society as a result of the price ceiling?
3. Outline the impact of the price ceiling on different stakeholders.

Over to you… (HL only)

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

- Page 127
- Paper 3 Exam Practice Question 10.1
- [4 marks]
- Paper 3 Exam Practice Question 10.2
- [5 marks]



Price controls – Price floor

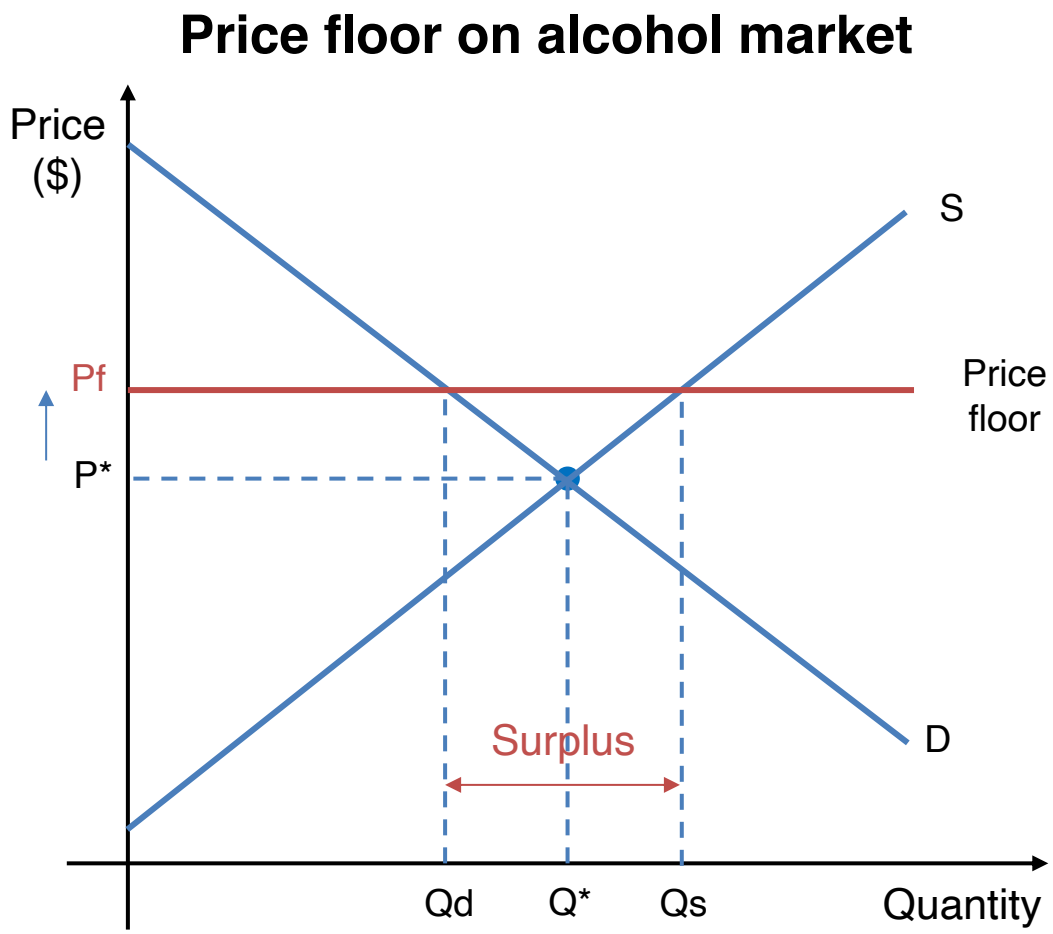
Real world example

What does the Scottish government hope to achieve by setting a minimum price for alcohol?

Price floor

A **price floor** is the legal minimum price set by the government for a particular good or service, to protect the income of producers and workers, or to discourage consumption.

Price floor

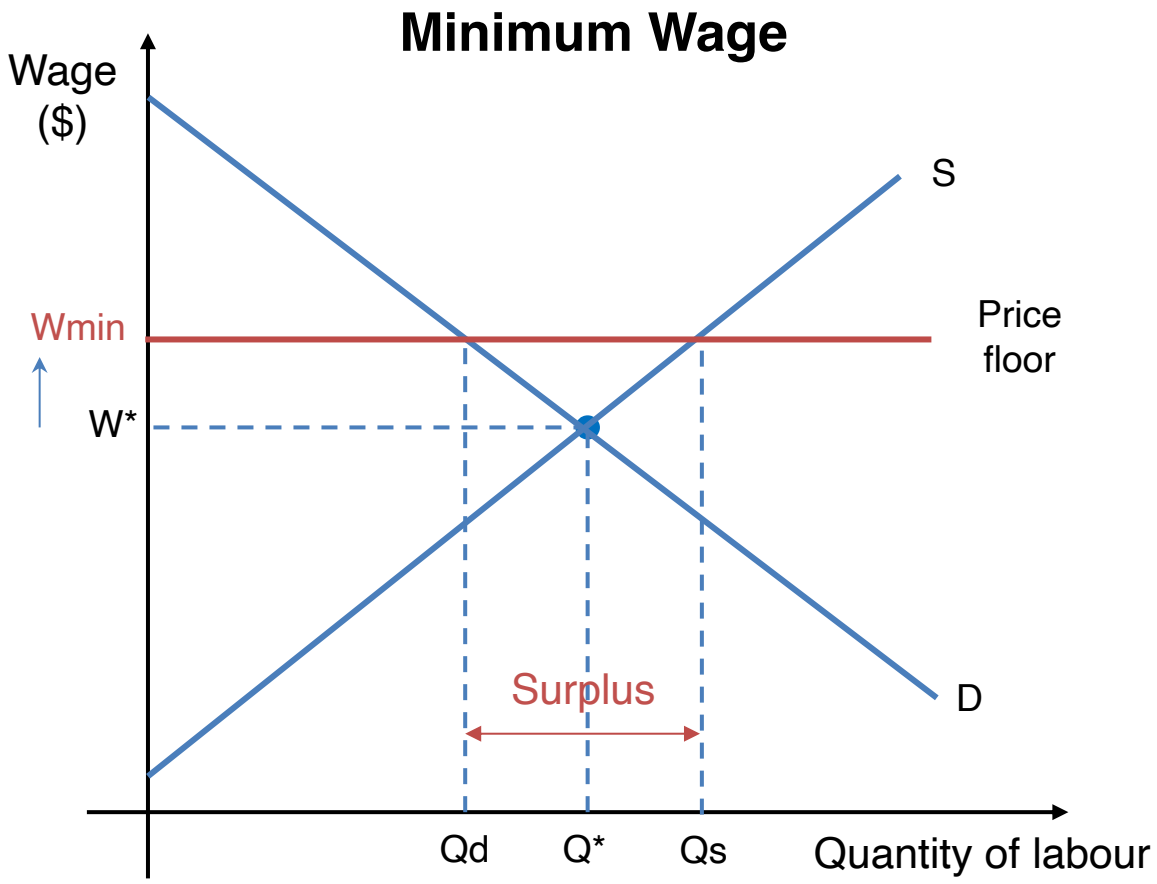


A price floor (Pf) is set above the equilibrium price (P*).

- Quantity supplied expands from Q* to Qs.
- Quantity demanded contracts from Q* to Qd.
- A **surplus** of Qs – Qd arises in the market.

This achieves the government objective of reducing alcohol consumption in order to reduce the associated social costs.

Price floor - Minimum wage



A price floor imposed on the labour market is known as a **minimum wage**. This aims to ensure workers have sufficient income to support basic needs. The minimum wage rate is at Wmin, set higher than the equilibrium at W*.

How might the implementation of a minimum wage impact stakeholders?

Real world example – data analysis

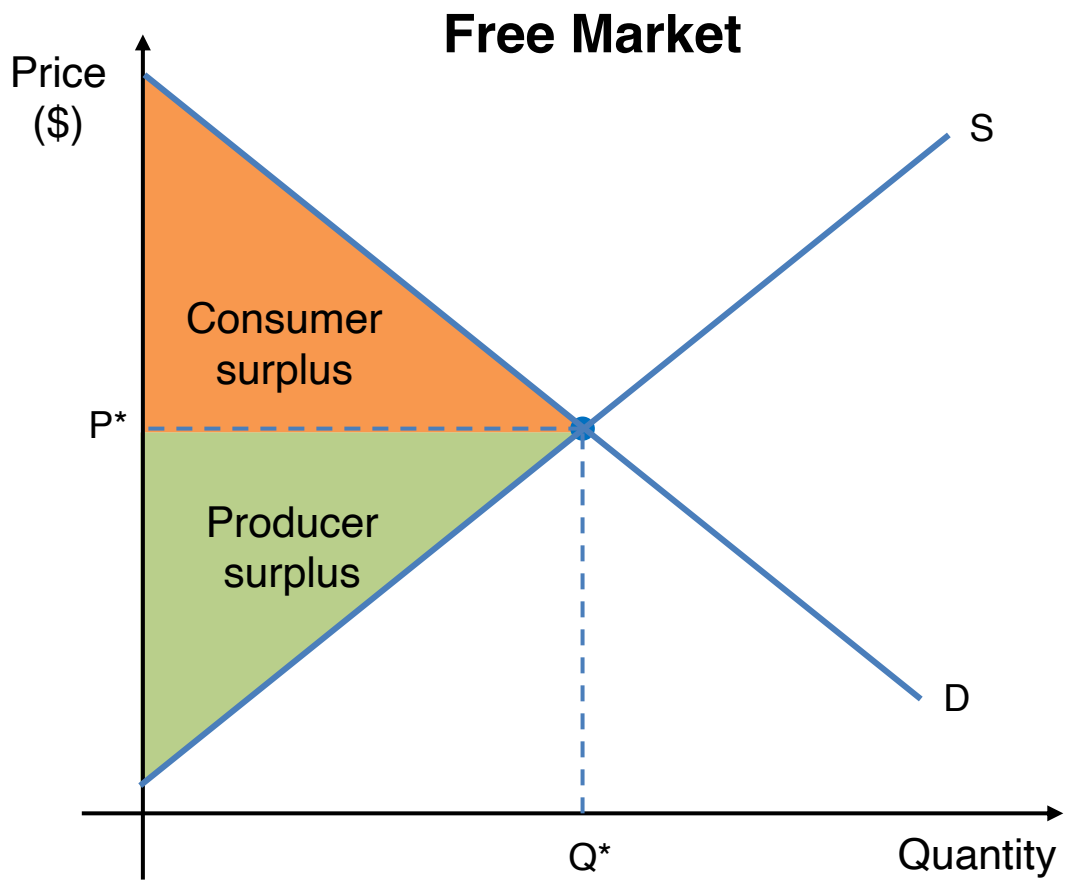
Source 1: Global minimum wage

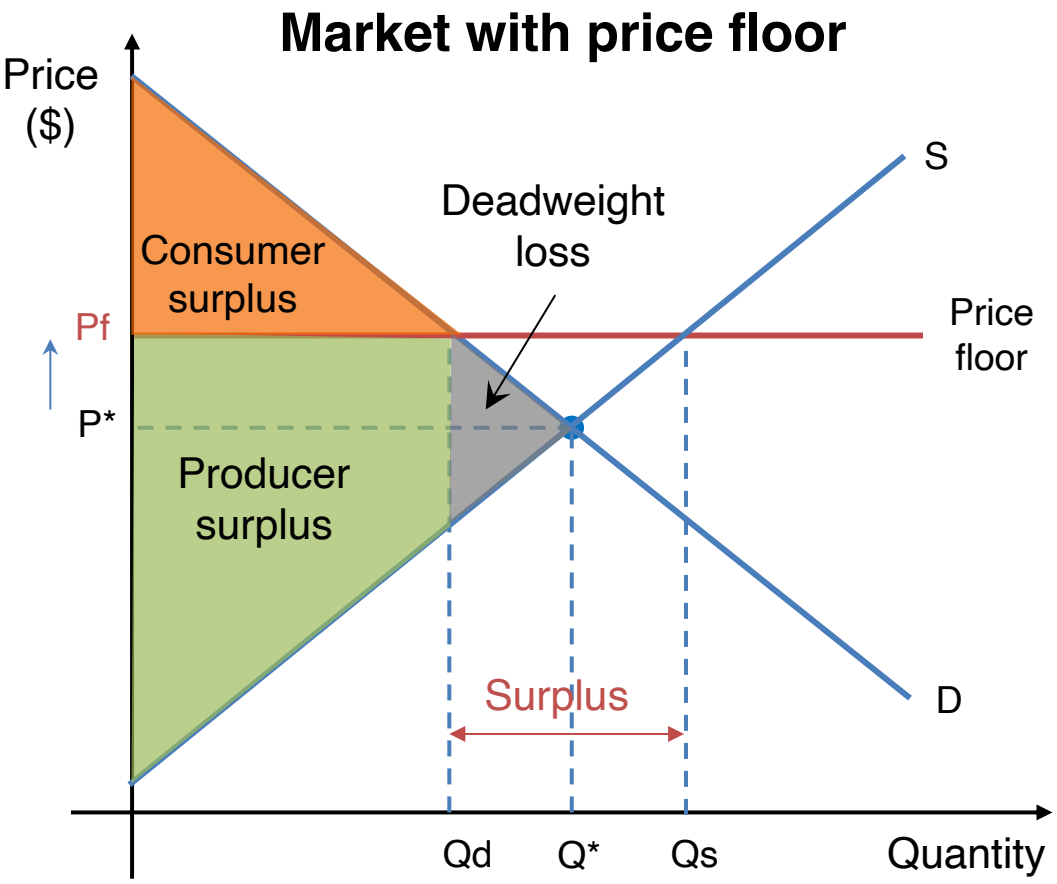
Source 2: Minimum Wage by Country 2021

Data analysis questions

1. What do you notice from the data?
2. What questions do you wonder about the data?
3. Research relevant information that may help you answer your questions from Q3.
4. What conclusions can you make from Q1, Q2, and Q3?

Price floor – impacts on stakeholders

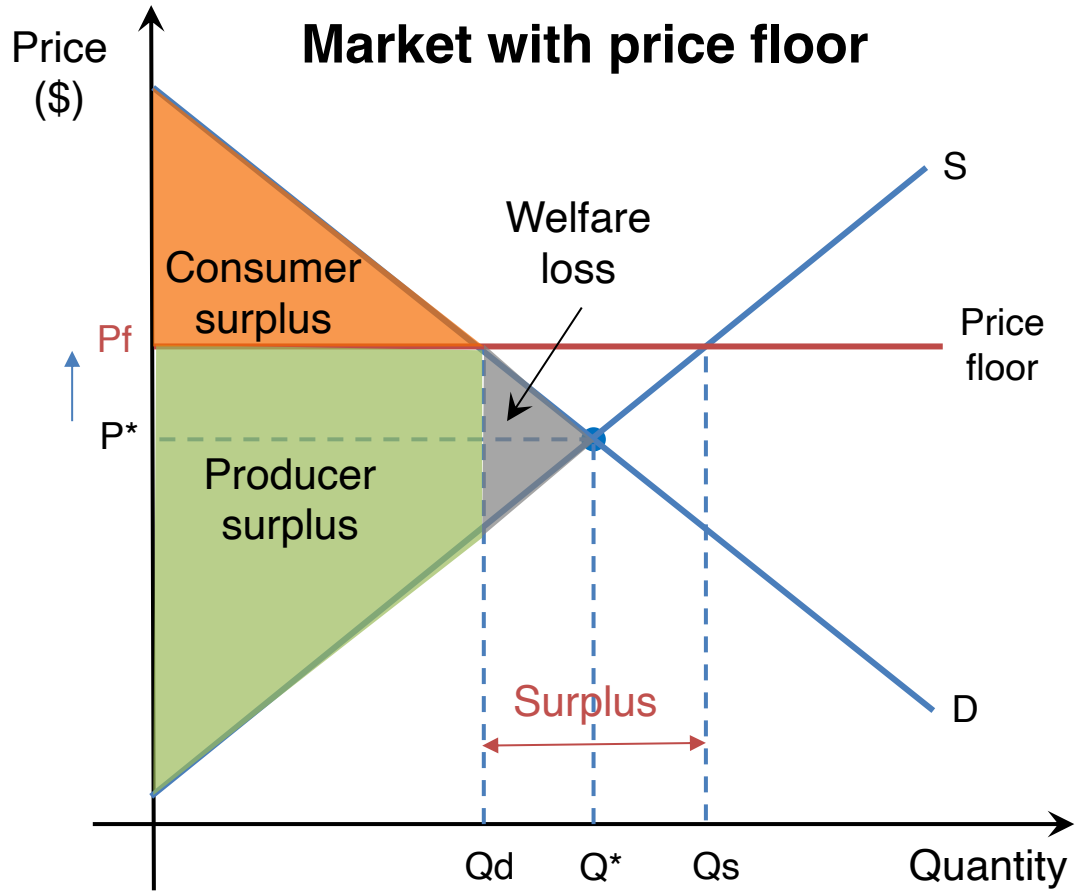




Price floor – impacts on stakeholders

Producers

- Sell at higher prices (P* to Pf)
- Reduced quantity sold (Q* to Qd)
- Producer revenue changes from (Q* × P*) to (Qd × Pf)
- If the government buys up the surplus, producers earn greater total revenue
- If the producers store up the surplus, they incur storage costs.



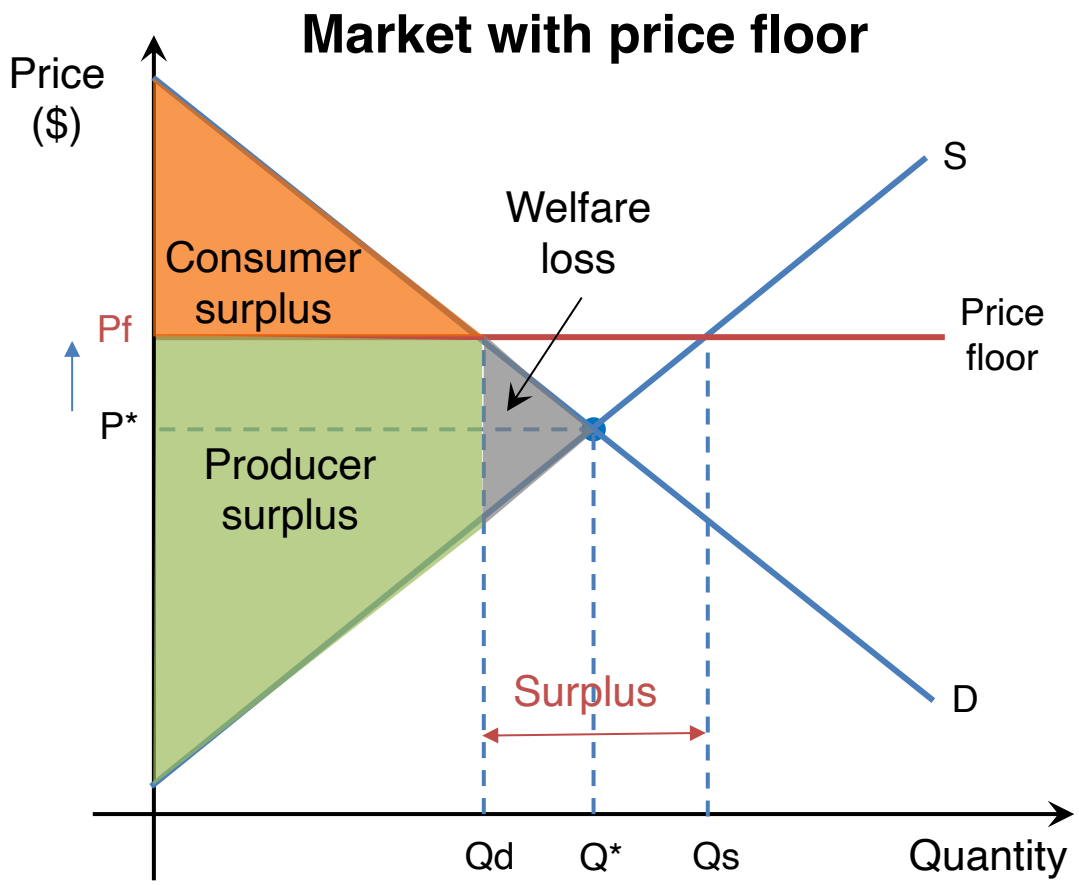
Price floor – impacts on stakeholders

Consumers

- Pay higher prices (P* to Pf)
- Reduce quantity consumed (Q* to Qd)
- Total expenditure changes from (Q* × P*) to (Qd × Pf)
- Consumer surplus decreases

Society

- Allocative inefficiency will depend on the type of good in question, e.g., demerit goods.



Real world example

Article: India Agriculture Minimum Support Price

1. The Indian government buys up the surplus in the price support scheme. Illustrate this on a diagram.

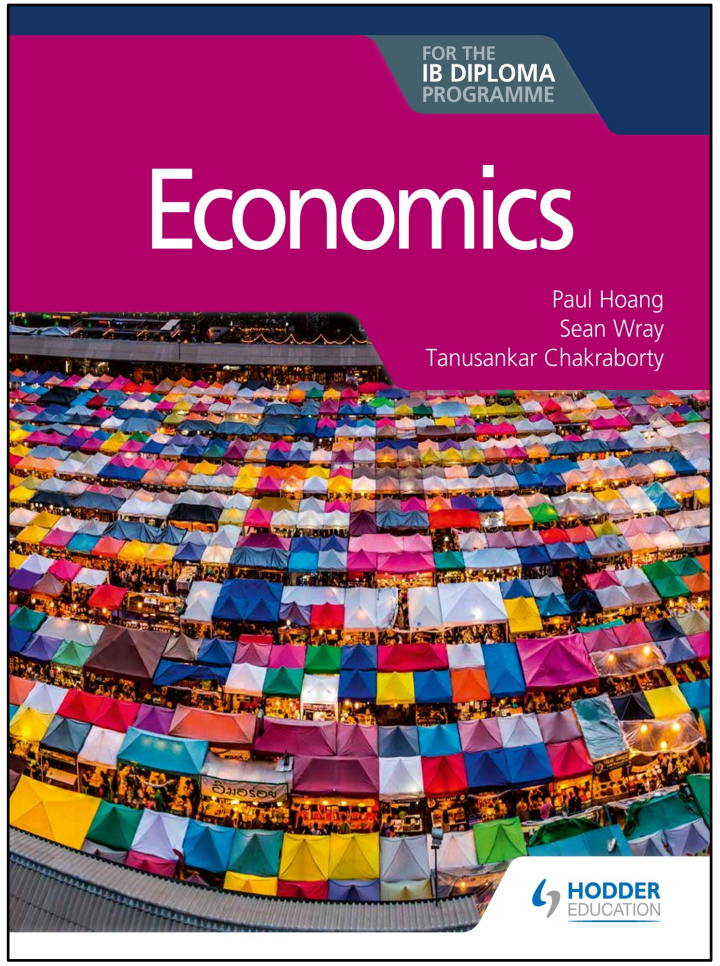
2. Evaluate the consequences of the policy to different stakeholders. Consider other advantages or drawbacks of the policy to various stakeholder groups.

Over to you… (HL only)

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

- Page 129
- Paper 3 Exam Practice Question 10.3
- [8 marks]



Test your knowledge on this unit: Kahoot!

Indirect tax

Real world example – Australia's sugary drinks tax

Why might the Australian government impose a sugary drinks tax?

Real world example – Japan's consumption tax

Consumption tax in Japan

"Pricing in Japan is about to become a lot more streamlined as price tags for all products and services will have to include **consumption tax** from April 1 [2021] onwards. As reported by *Japan Today*, retailers as well as restaurants will be expected to include the consumption tax in their listed prices. For most purchases in Japan, consumption tax is currently set at 10 percent."

Indirect tax

Indirect tax is imposed on the expenditure of goods and services, paid to the government through producers.

Types of indirect tax

Excise tax is a type of indirect tax imposed on the expenditure of certain goods and services.

Examples: Sugar, gasoline, and tobacco.

Taxes on spending on goods and services

Examples: Consumption tax in Japan, Goods and Services Tax (GST) in the US, and Value Added Tax (VAT) in the UK.

Why do governments impose indirect taxes?

Source of government revenue

Tax revenue can be collected from indirect taxes. To generate greater tax revenue, excise taxes are often imposed on goods with **low price elasticity of demand (PED)**, as the decrease in quantity demanded is proportionally smaller than the increase in price.

Decrease consumption of harmful goods

The consumption of certain goods is harmful to society and individuals e.g., cigarettes and alcohol. Consumption of these goods may be discouraged through the imposition of indirect taxes.

Why do governments impose indirect taxes?

Redistribute income

Some excise taxes are charged on the consumption of luxury goods, e.g., sports cars and jewellery. Expenditure taxes from the consumption of high-income groups can be used to be redistribute income towards lower income groups via transfer payments.

How might a general sales tax on all goods and services impact income distribution?

Why do governments impose indirect taxes?

Improve allocation of resources

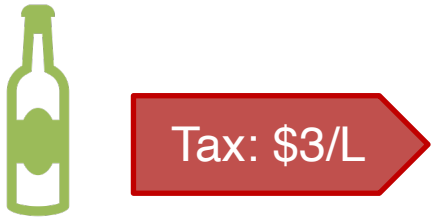
The provision of certain goods leads to market failure and allocative inefficiency. Indirect taxes can be used to correct market failures. For example, indirect taxes are often imposed on:

- Tobacco
- Alcohol
- Petrol-based vehicles

Types of indirect tax

Specific tax

- A fixed dollar amount is imposed on each unit of output.
- Amount of tax paid is independent of the price of the good.



Ad-valorem tax (supplementary information)

- A fixed percentage amount is imposed on each unit of output.
- As the price of the good increases, the amount of tax paid increases.

Indirect tax

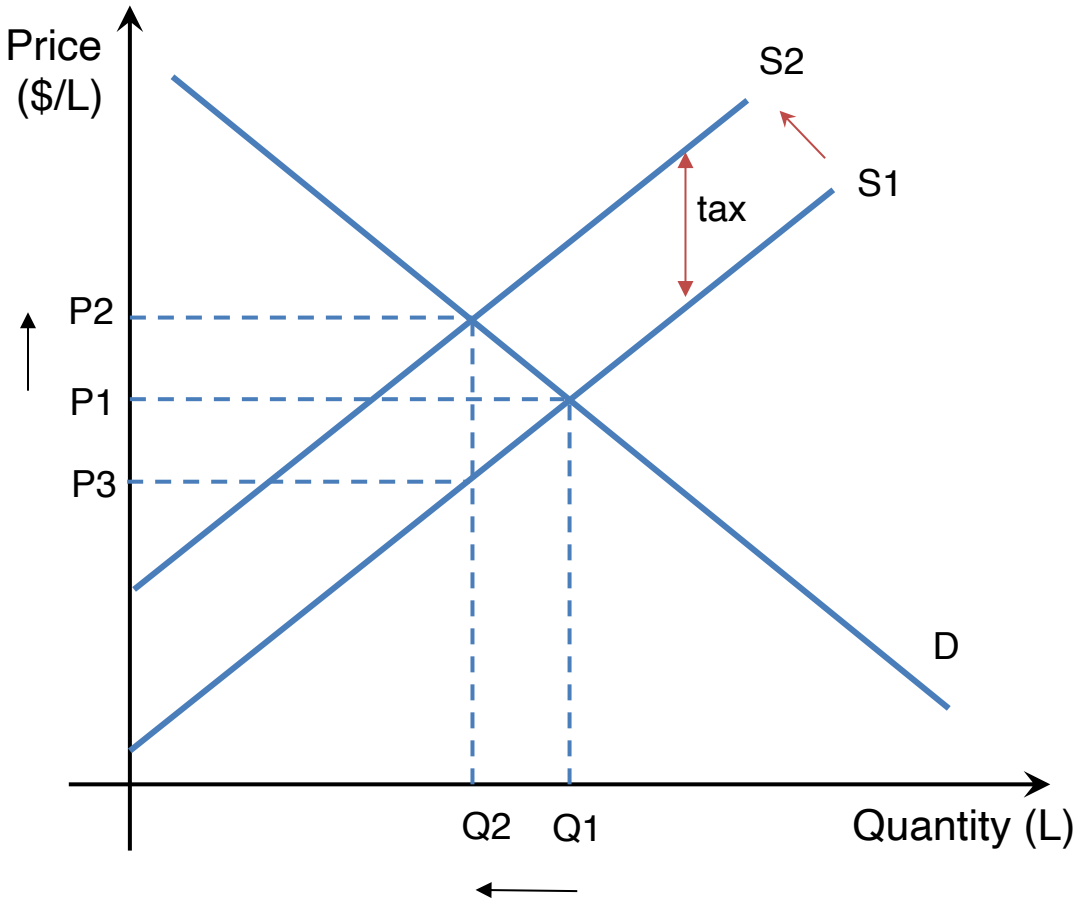
Specific tax

Suppose a specific tax of $3/L is imposed on all alcoholic drinks. The cost of selling each unit of the good is increased by $3.

Quantity supplied (L)	Price before the tax is imposed ($/L)	Price after the tax is imposed ($/L)
1	1	4
2	2	5
3	3	6
4	4	7
5	5	8

Indirect tax

Specific tax on alcohol



Specific tax

- The supply curve shifts upwards by the taxed amount.
- The original and new supply curves are parallel.

Market outcomes

- Equilibrium quantity decreases from Q1 to Q2
- Equilibrium price increases from P1 to P2
- Price paid by consumers increases to P2
- Price received by producers decreases to P3

Indirect tax

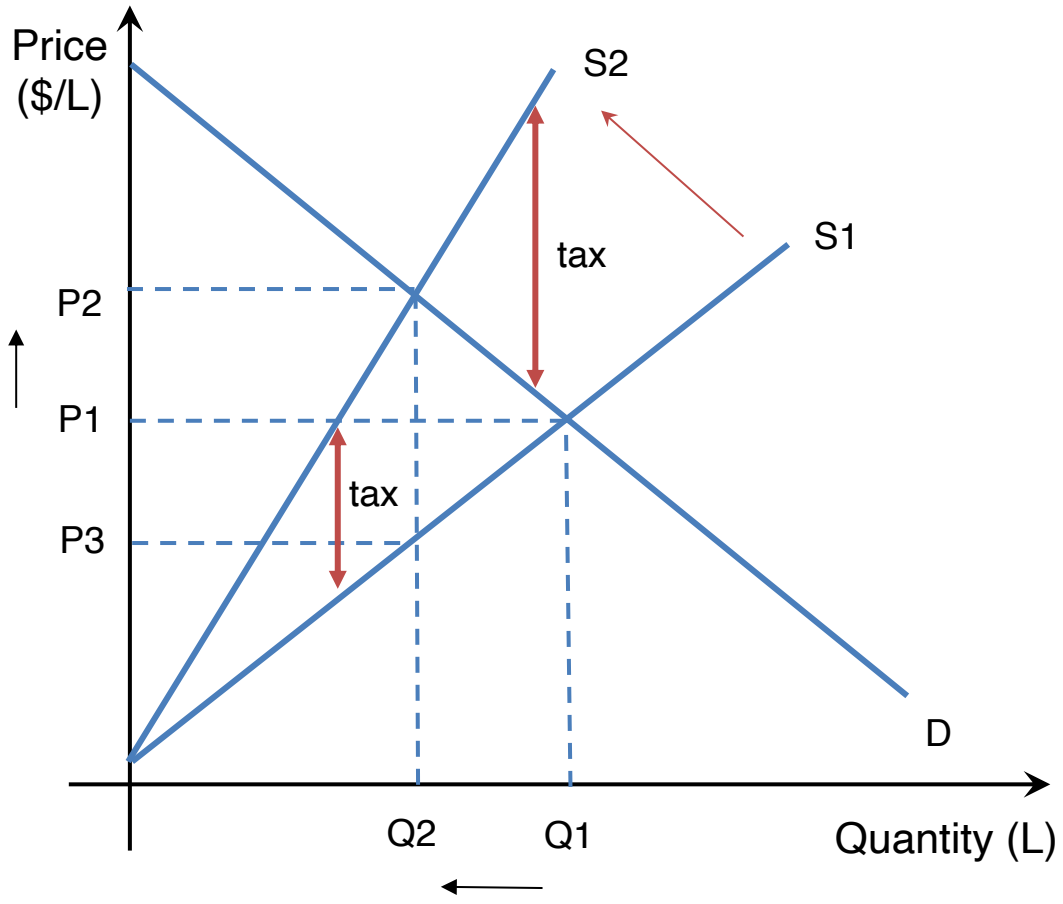
Percentage tax

Suppose an *ad valorem* tax of 100% is imposed on all alcoholic drinks. The cost of selling each unit of good is increased.

Quantity supplied (L)	Price before the tax is imposed ($/L)	Price after the tax is imposed ($/L)
1	1	2
2	2	4
3	3	6
4	4	8
5	5	10

Indirect tax

Ad-valorem tax (supplementary info)



Ad valorem tax*

- The supply curve pivots and shifts upward by the amount of tax paid.
- The original and new supply curves are not parallel.

Market outcomes

- Equilibrium quantity decreases from Q1 to Q2
- Equilibrium price increases from P1 to P2
- Price paid by consumers increases to P2
- Price received by producers decreases to P3.

Real world example – group research activity

Norway has had an indirect tax on sugar since 1922 but has recently increased the tax in 2018.

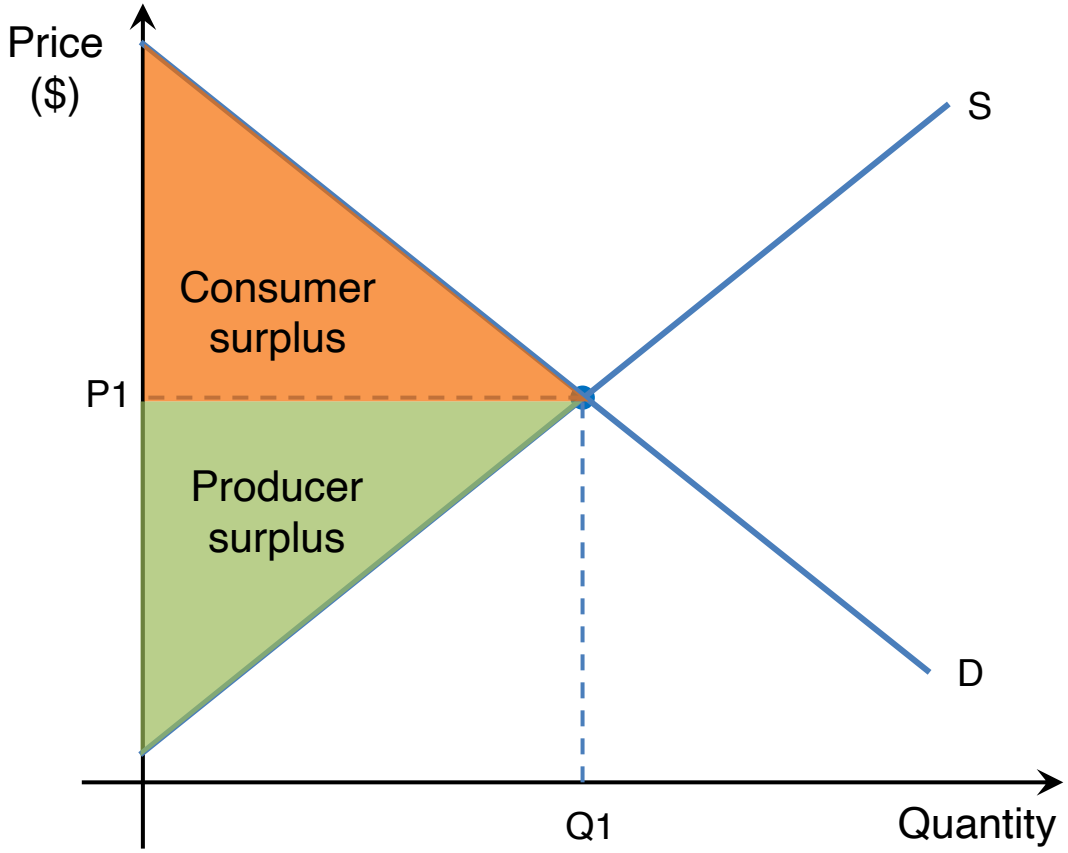
Investigate the sugar tax and its objectives, then answer the following questions.

Norway Sugar Tax Research Activity

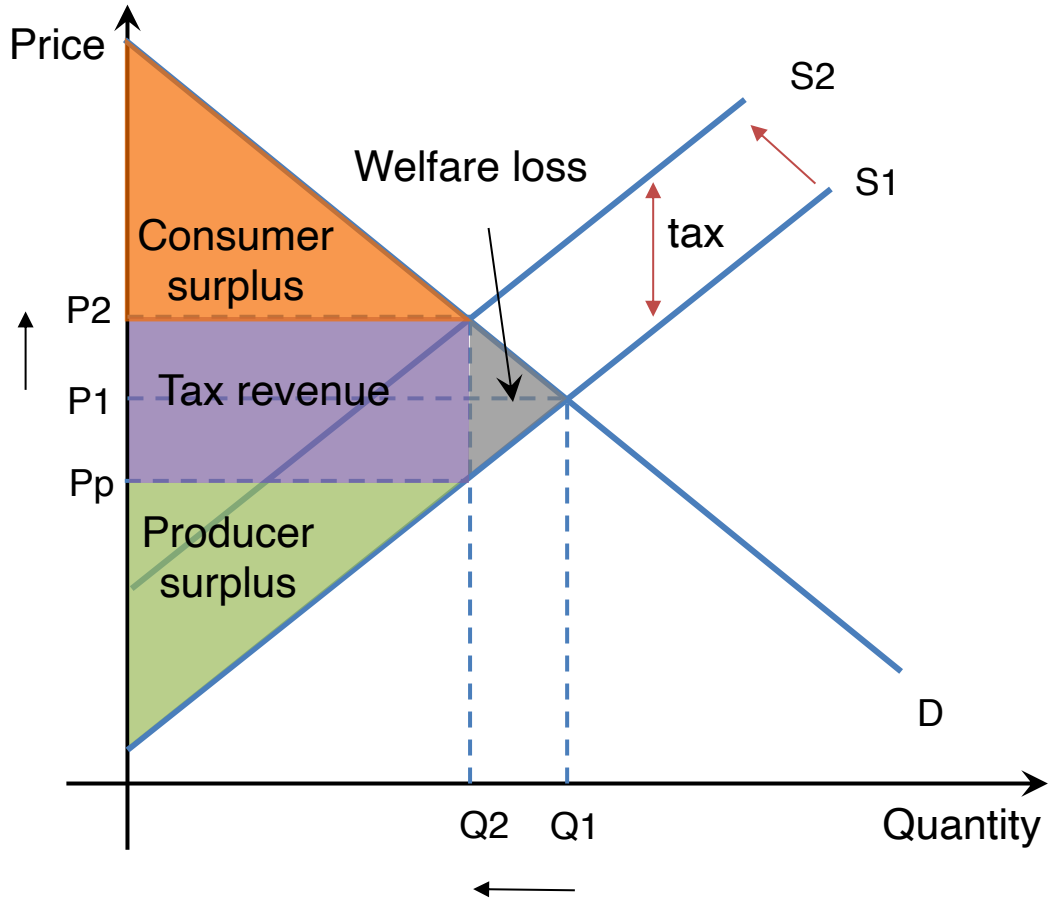
1. What type of tax is the Norway sugar tax?
2. Why was the sugar tax originally introduced?
3. What was the tax levied on?
4. Why did Norway recently increase the tax?
5. How did the tax affect employment in the sugar-sweetened beverage industry?
6. What is the public opinion on the sugar tax?
7. Evaluate whether a sugar tax should be imposed in your country of residence.

Indirect tax – impacts on stakeholders

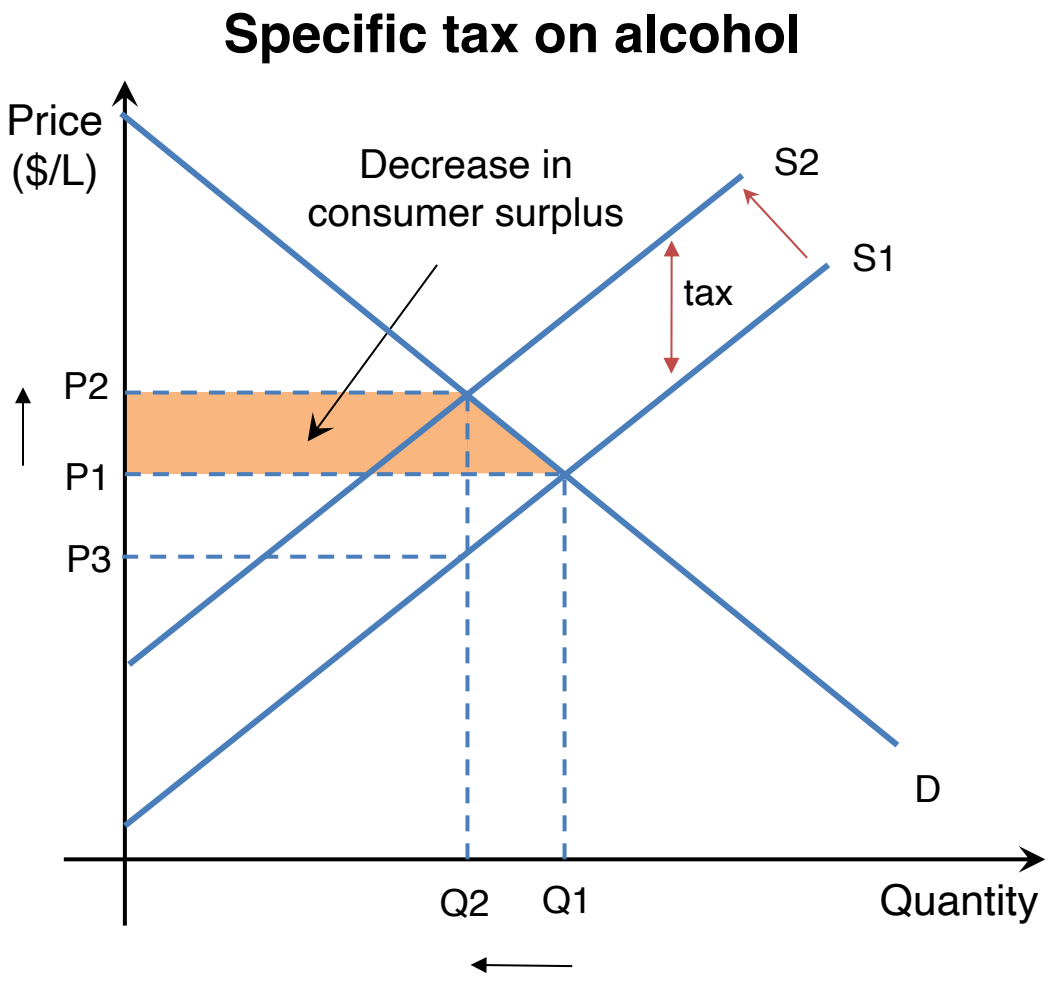
Market without indirect tax



Market with indirect tax



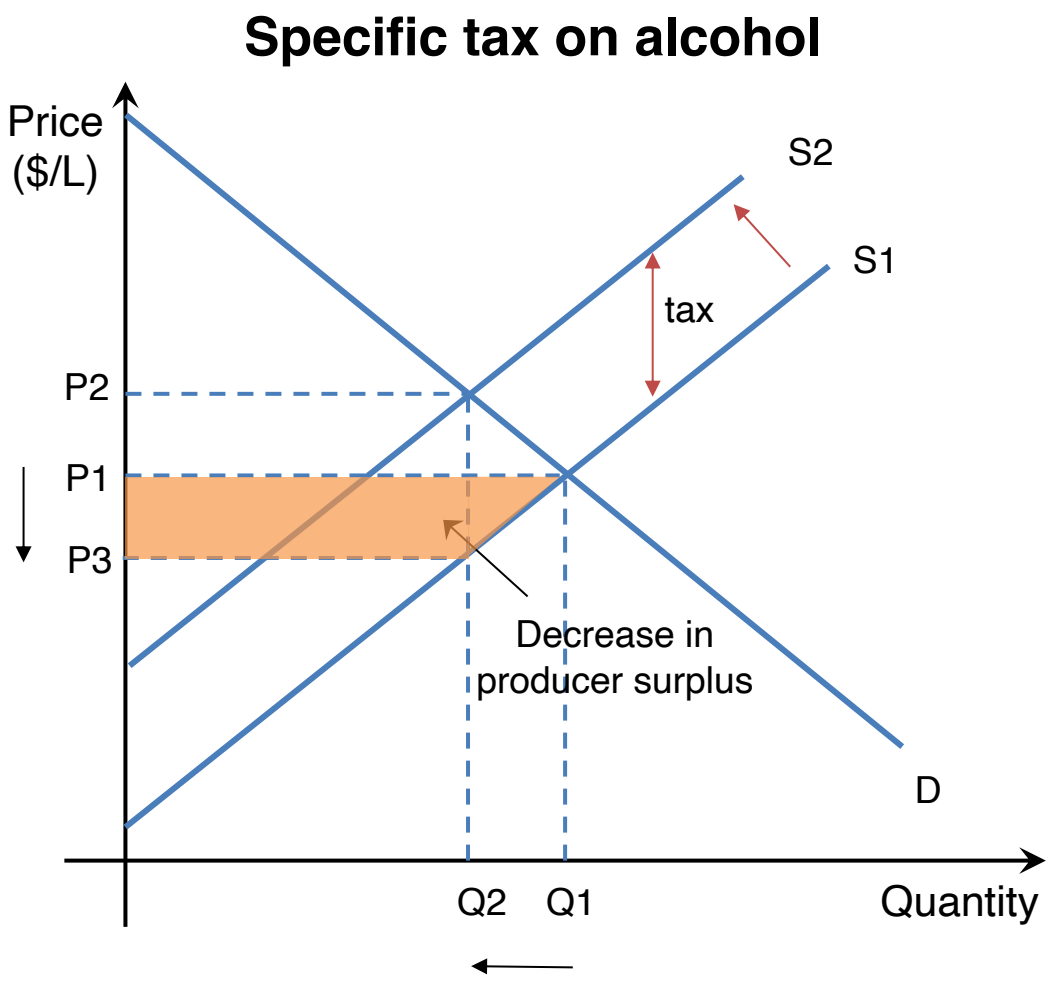
Impacts on stakeholders - consumers



Consumers

- Price paid by consumers increases (from P1 to P2).
- Quantity demanded contracts (from Q1 to Q2).
- Inefficiencies as customers pay higher prices and receive lower quantities.
- Total expenditure changes from (P1 × Q1) to (P2 × Q2).
- Consumer surplus decreases by shaded area shown in diagram.

Impacts on stakeholders - producers



Producers

- The price received by producers decreases (from P1 to P3).
- Quantity transacted decreases (from Q1 to Q2).
- Total revenue decreases (from P1 × Q1 to P3 × Q2.
- Producer surplus decreases by the shaded area in the diagram.

Impacts on stakeholders - workers and the government

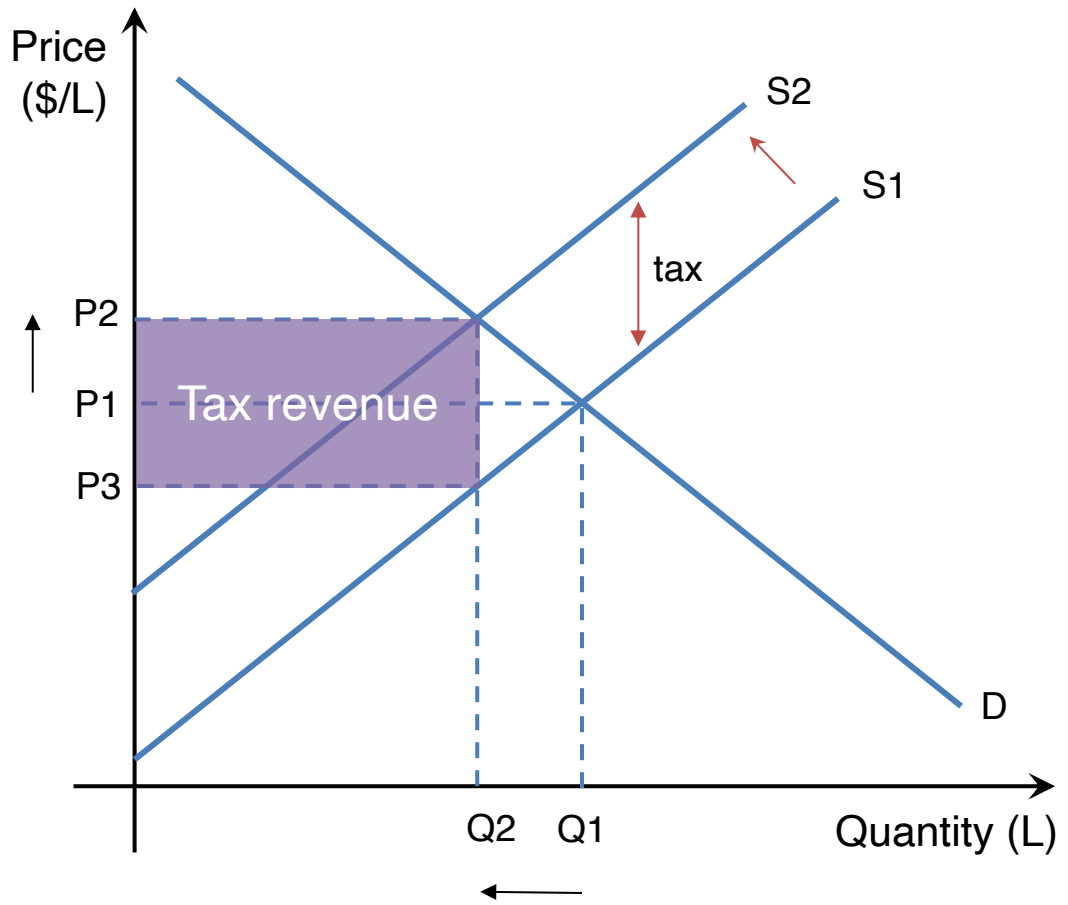
Workers

- Lower output (from Q1 to Q2) causes lower derived demand for labour.
- Unemployment is likely to rise.
- Wages are likely to decrease.

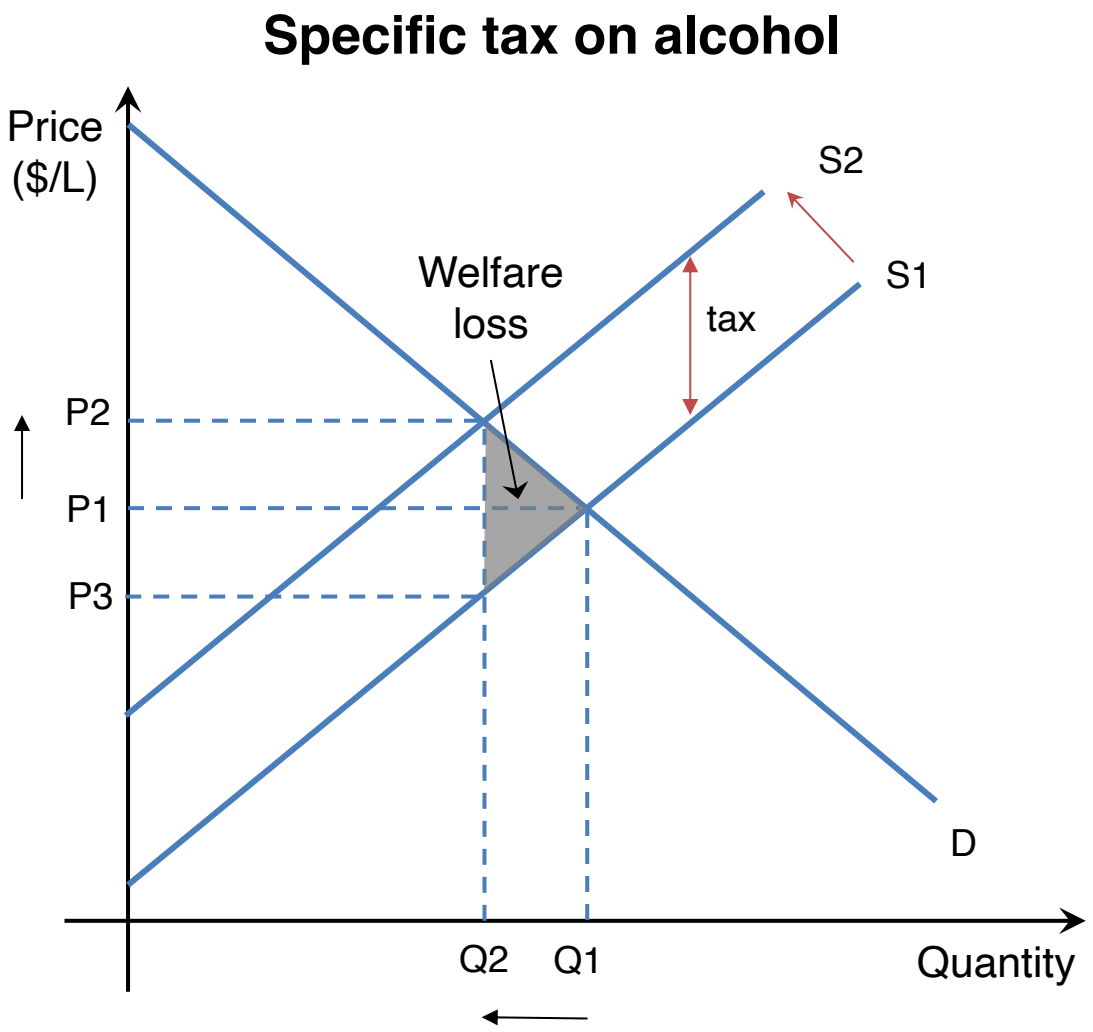
Government

- Gains tax revenue (tax per unit × Q2).
- Increased source of government revenue (shown by shaded area in the diagram).

Specific tax on alcohol



Impacts on stakeholders - society



Society

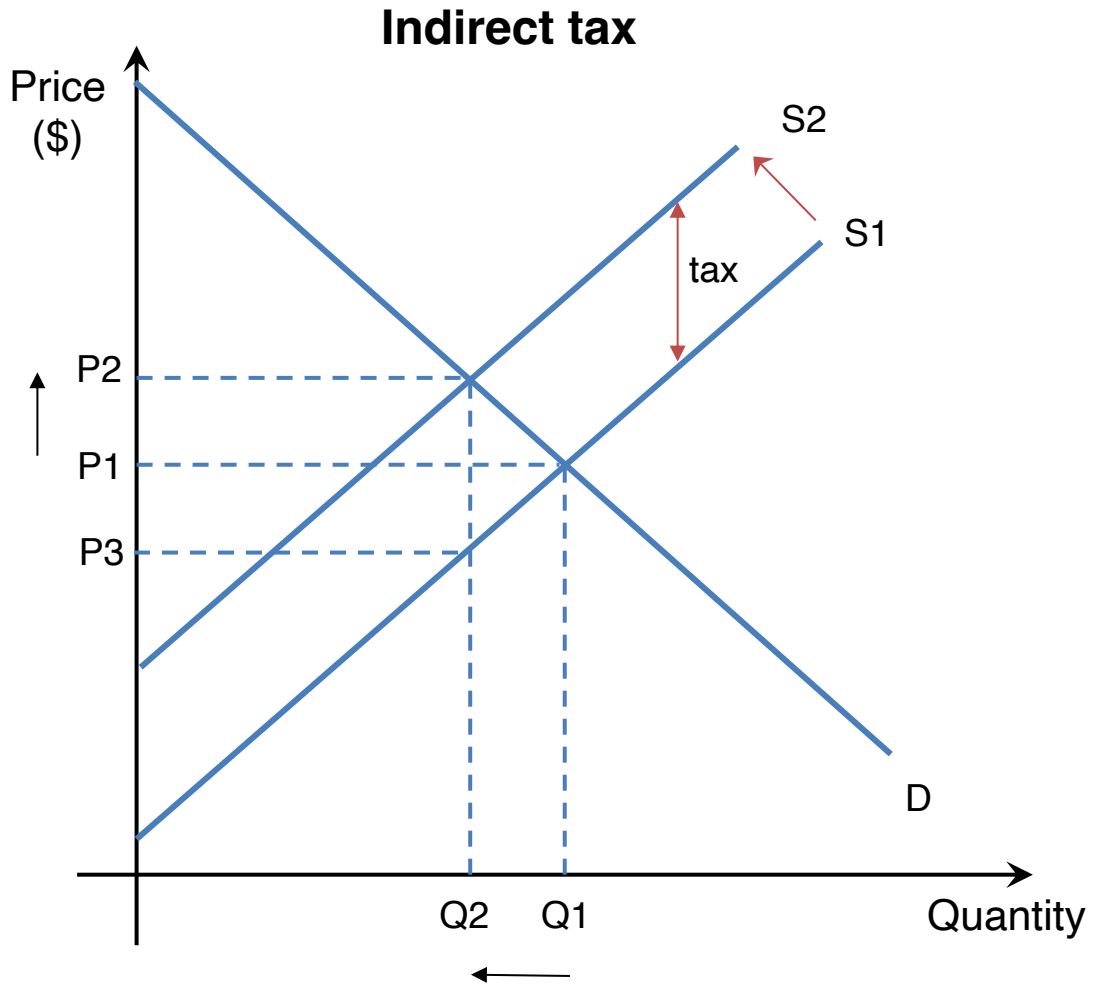
- The new output level (Q2) is less than the free market output (Q1)
- The under-allocation of resources results in a welfare loss.
- Allocative efficiency is not achieved.

Real World Example

Article: Sorry, Vermont vapers. E-cigarettes are about to get a lot more expensive

1. Illustrate the impact of the government intervention on the E-cigarette market.
2. Examine the consequences of the indirect tax on different stakeholders.
3. To what extent is the E-cigarette tax effective in lowering its consumption?

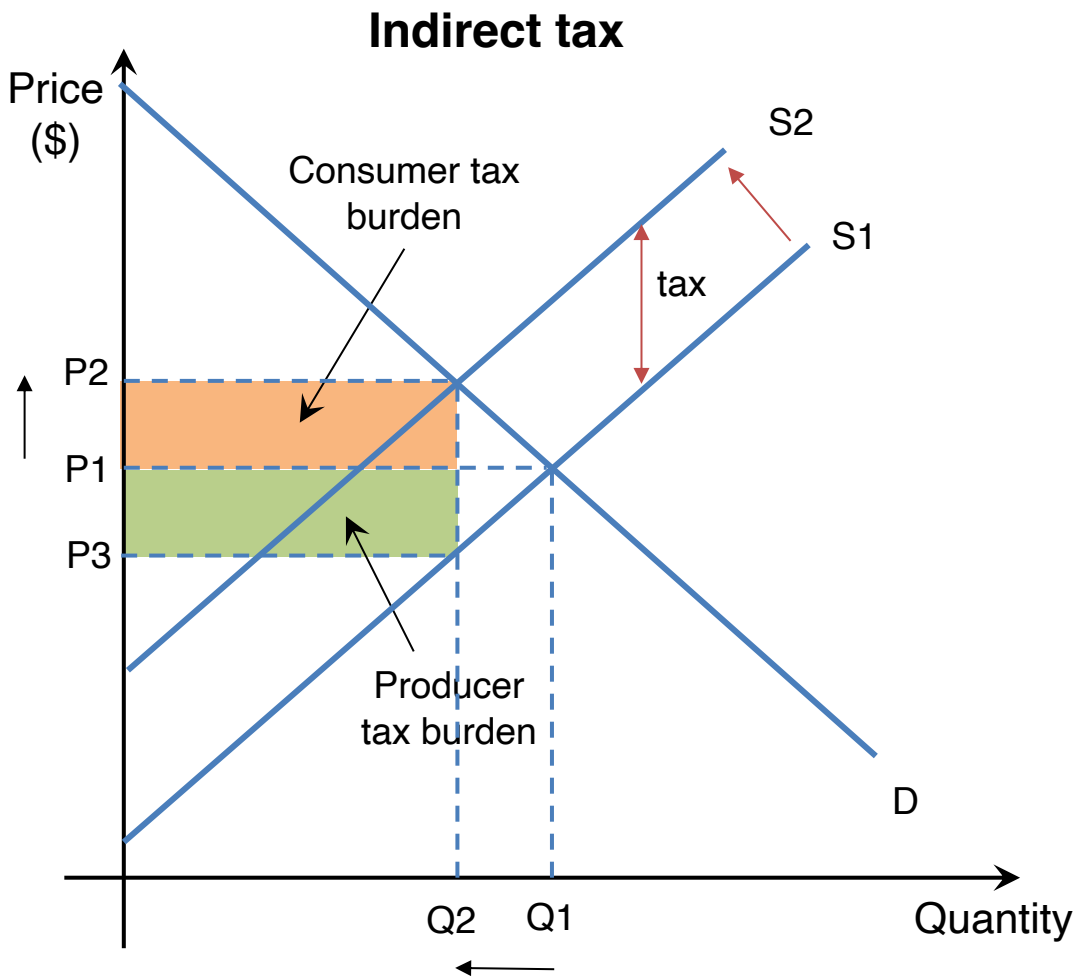
Tax incidence (HL only)



Tax incidence is the distribution of tax burden between consumers and producers.

While the price received by producers decreases and the price paid by consumers increases, both producers and consumers pay a part of the indirect tax.

Tax incidence (HL only)



Consumer tax burden:

Additional expenditure per unit x number of units

(P2 – P1) × Q2

Producer tax burden:

Revenue loss per unit x number of units

(P1 – P3) × Q2

Consumer burden + Producer burden

= Government tax revenue

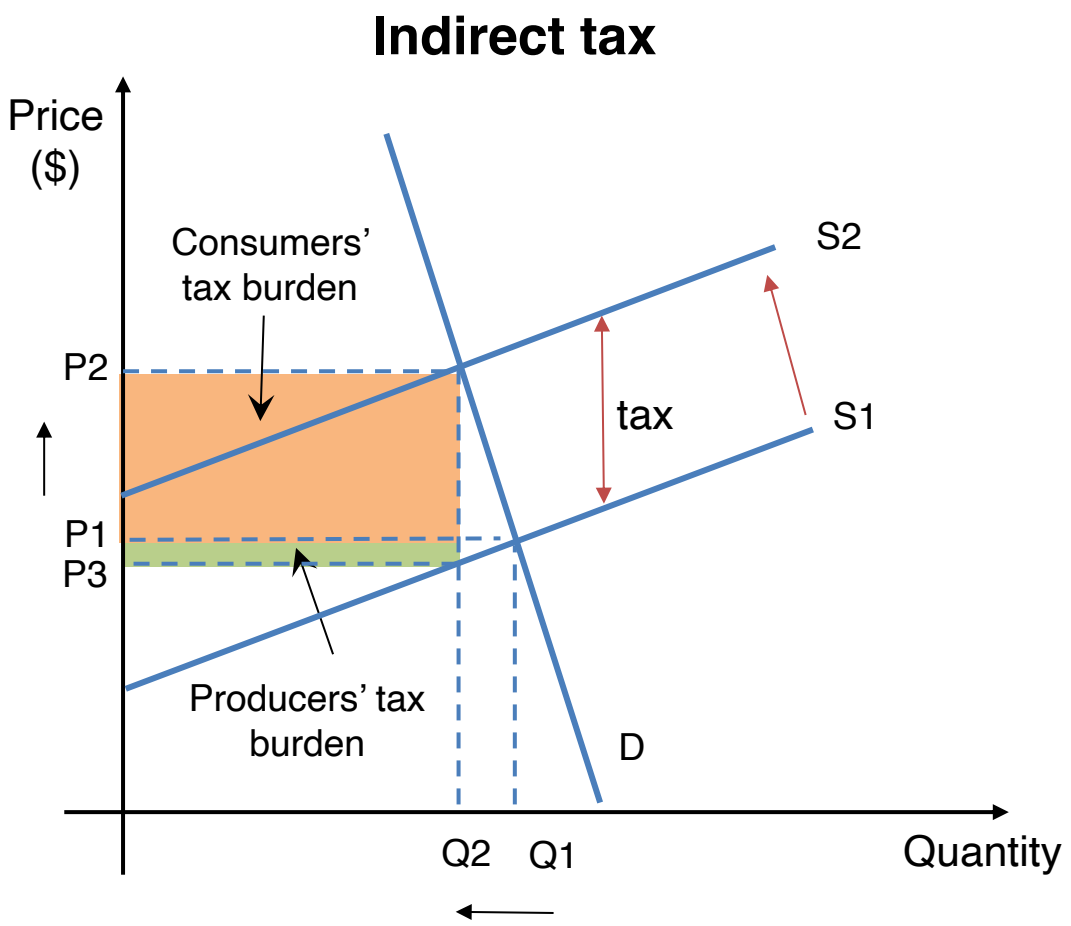
Who pays more tax? (HL only)

Consumers' tax burden VS Producers' tax burden

The distribution of tax burden between consumers and producers depends on the price elasticity of demand (PED) and price elasticity of supply (PES) of the good.

Who pays more tax? (HL only)

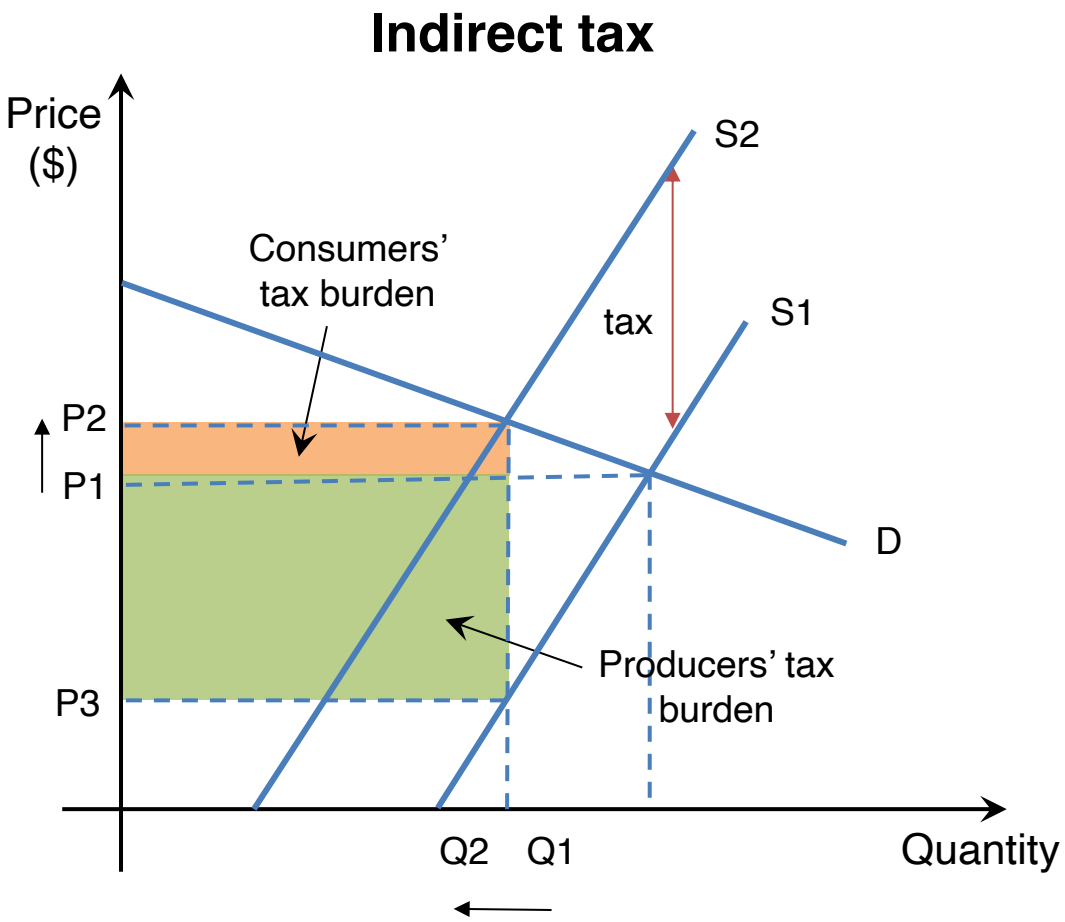
Case 1: PES > PED



- Given an indirect tax, the increase in price for consumers (from P1 to P2) exceeds the decrease in price received by producers (from P1 to P3).
- Consumers bear a greater tax burden as they are less sensitive to the price change compared to the producers.
- Consumer tax burden > Producer tax burden

Who pays more tax? (HL only)

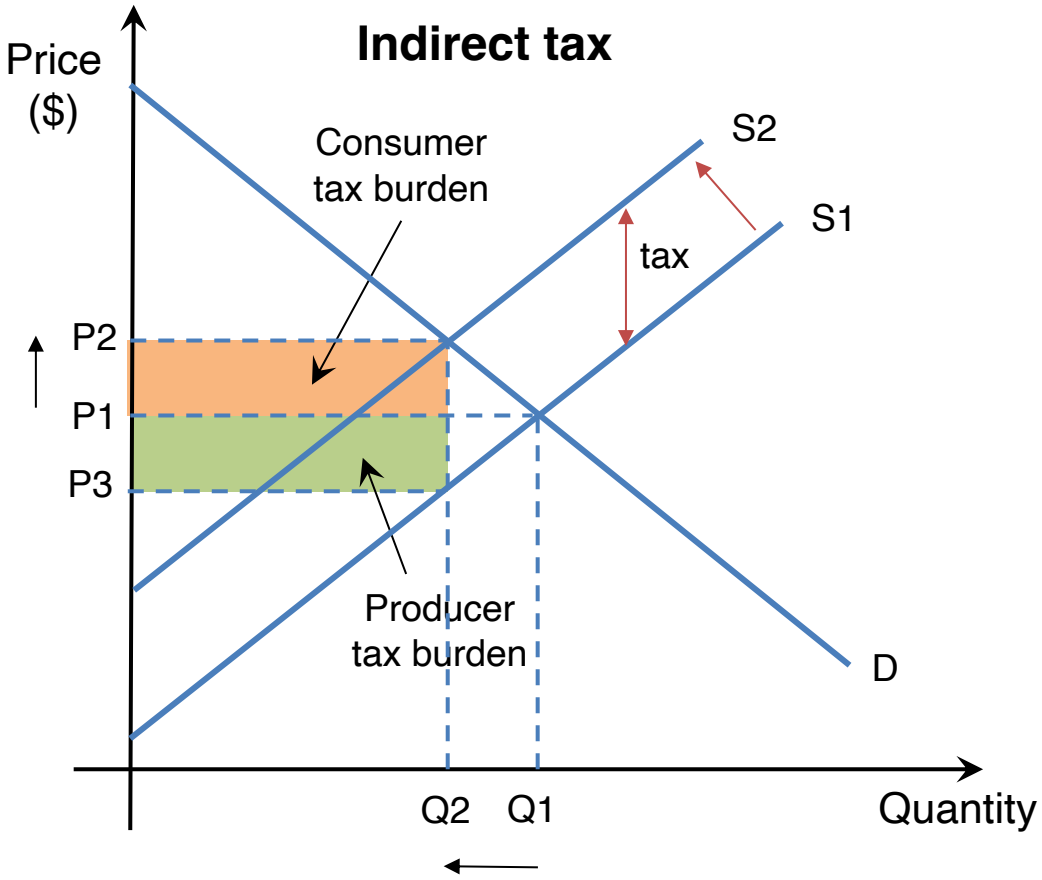
Case 2: PES < PED



- Given this indirect tax, the increase in price for consumers (from P1 to P2) is less than the decrease in price received by producers (P1 to P3).
- Producers bear a greater tax burden as they are less sensitive to the price change compared to the consumers.
- Hence, consumer tax burden < producer tax burden

Who pays more tax? (HL only)

Case 3: PES = PED



- Given the indirect tax, the increase in price paid by consumers equals the decrease in price received by producers.
- Both consumers and producers are equally sensitive to the price change, and share the burden of the tax equally,
- Hence, consumer tax burden = producer tax burden.

Tax incidence (HL only)

Summary

When PES > PED, consumer tax burden > producer tax burden.

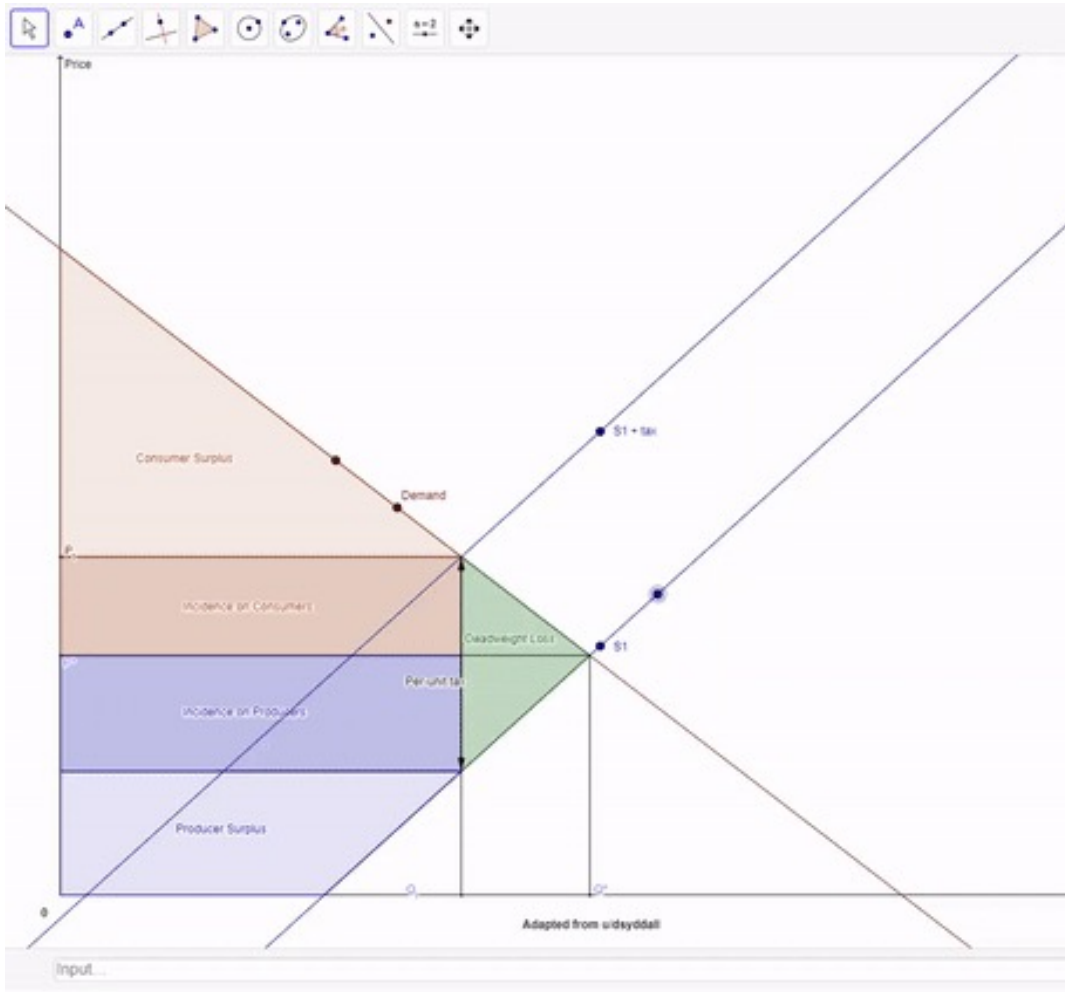
When PES < PED, consumer tax burden < producer tax burden.

When PES = PED, consumer tax burden = producer tax burden.

Impact of Elasticities on Tax Incidence (HL only)

GeoGebra Interactive Diagram

Experiment with the curves to investigate how differing elasticities impact tax incidence, surplus, and welfare loss.



Over to you… (HL only)

Hoang, Wray, & Chakraborty (2020)

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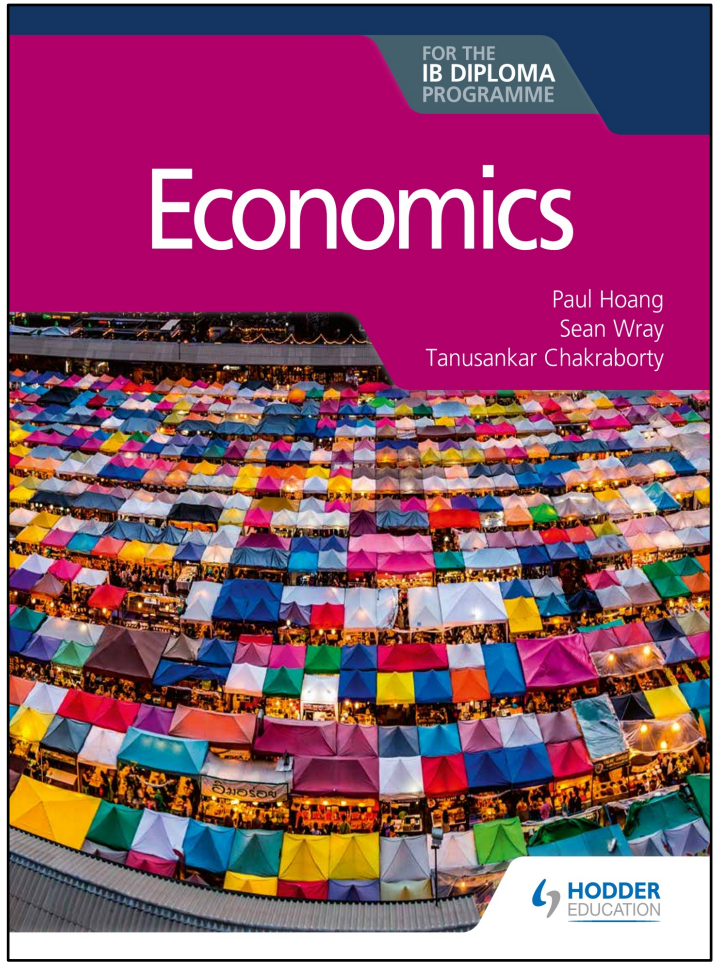
- Page 132
- Paper 3 Exam Practice Question 10.4
- [12 marks]



Subsidy

Subsidy

A **subsidy** is a form of financial aid given by the government, usually to producers in order to (i) reduce the costs of production, (ii) increase output, and (iii) reduce prices.

Real world example

Article: Macron unveils €8 billion rescue package for French car industry

Why does the French government provide subsidies to the car industry?

Why does the government provide subsidies?

To reduce production costs of merit goods and to correct market failures

By reducing the production costs of merit goods, e.g., healthcare services and education, producers are encouraged to increase the supply of socially desirable goods and services.

To lower the cost of living for individuals and households

The government may provide subsidies for necessities, e.g., food and accommodation. These goods may then be more affordable to consumers, lowering their general living costs.

Why does the government provide subsidies?

To increase the international competitiveness of domestic firms

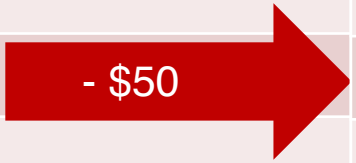
Export subsidies help protect domestic firms that are competing in the international market. Firms may lower their export prices, increasing export competitiveness.

How does increased export competitiveness benefit the economy?

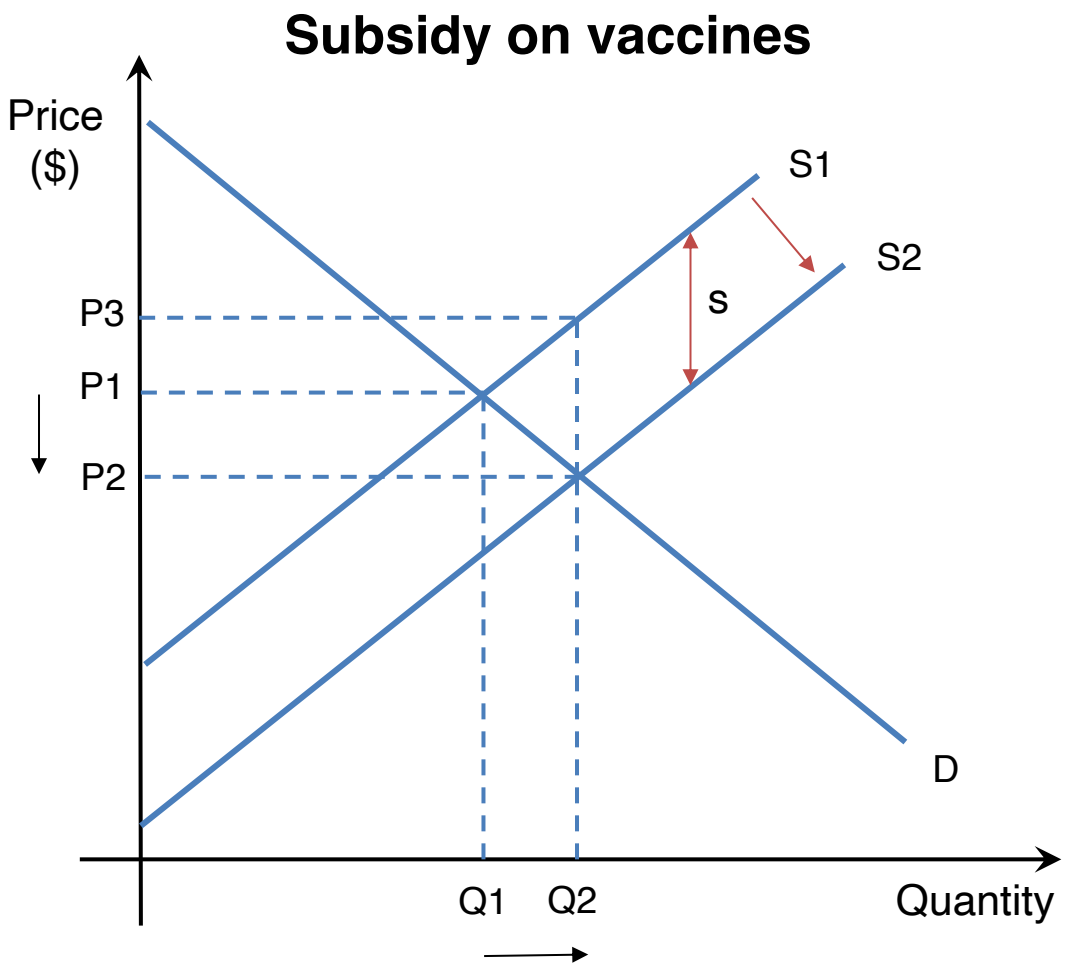
Subsidy

Suppose the government imposes a subsidy of $50 per vaccine. The cost of producing each unit of vaccine is reduced by $50.

Quantity supplied	Price before the subsidy is imposed ($)	Price after the subsidy is imposed ($)
1	100	50
2	200	150
3	300	250
4	400	350
5	500	450



Subsidy



- The supply curve shifts downwards by the amount of the subsidy.
- The equilibrium price falls from P1 to P2.
- The equilibrium quantity increases from Q1 to Q2.
- The price paid by consumers falls from P1 to P2.
- The price received by producers increases from P1 to P3.

Over to you… (HL only)

Hoang, Wray, & Chakraborty (2020)

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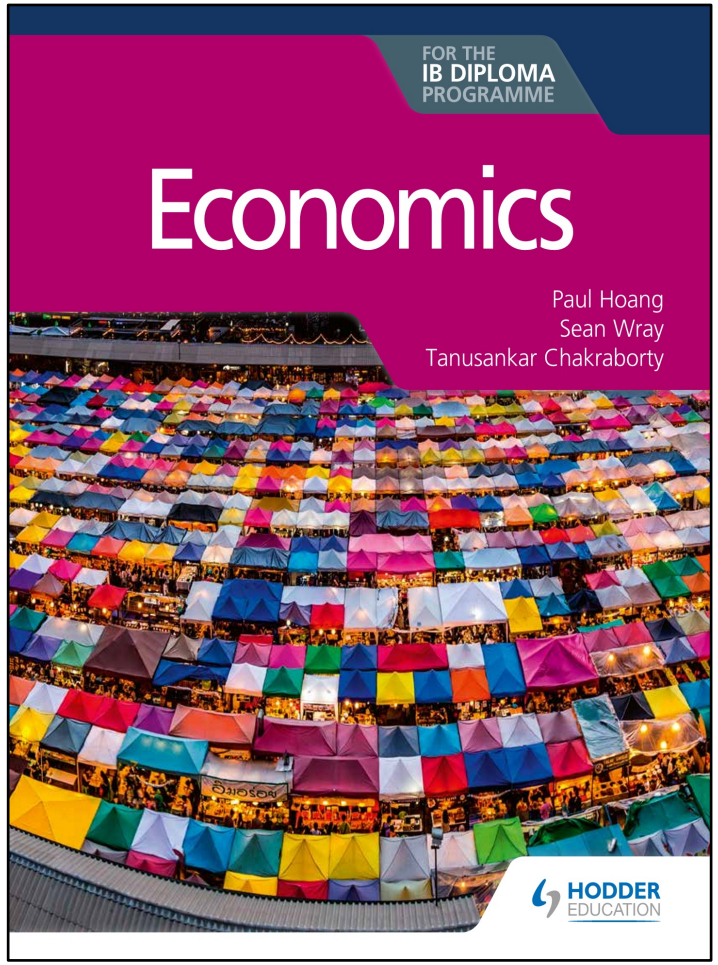
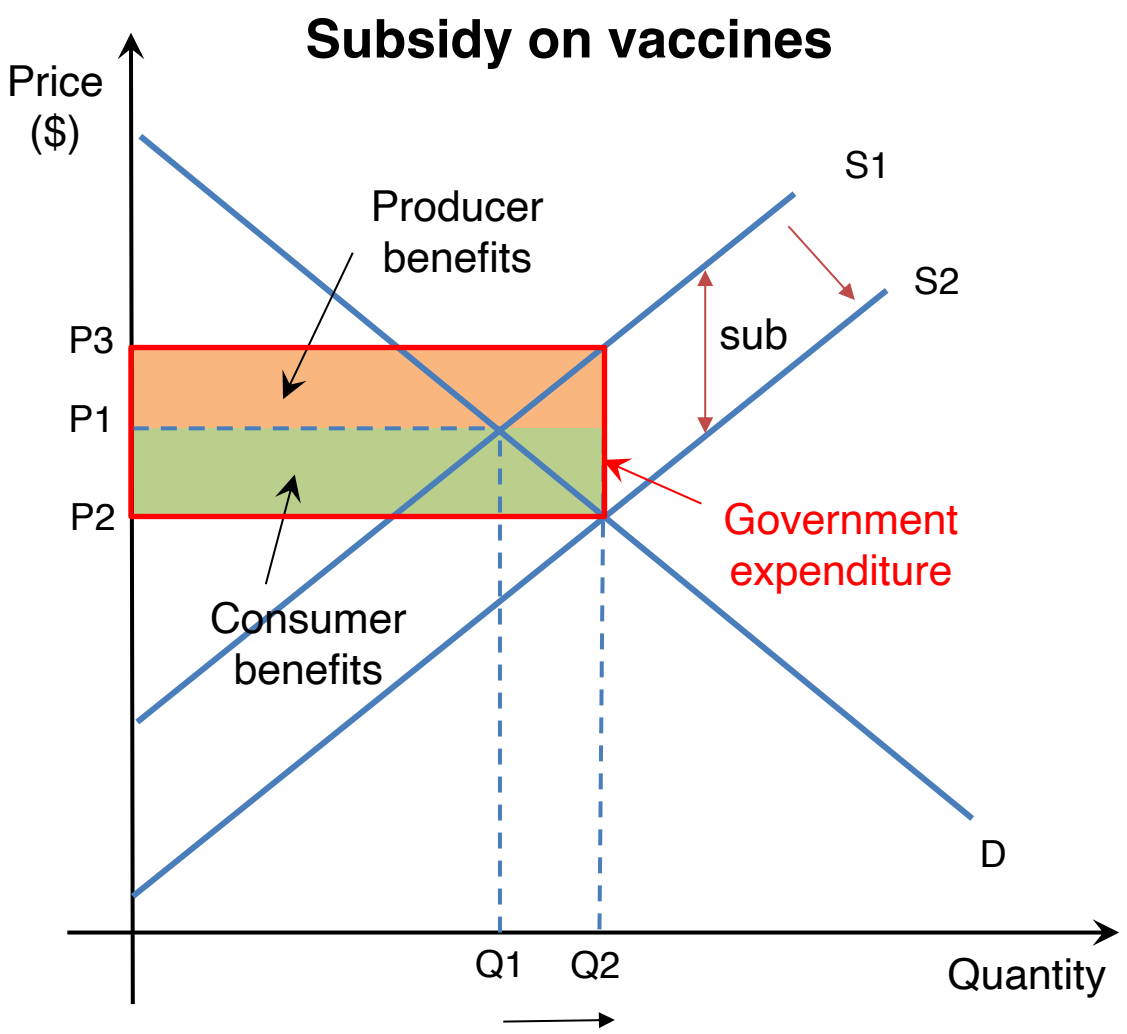
- Paper 3 Exam Practice Question 10.5
- [10 marks]



Distribution of subsidy



- The benefits of a subsidy are shared by both consumers and producers.
- For every unit of vaccine consumed, consumers pay less (from P1 to P2) .
- For every unit of vaccine produced, producers earn more (from P1 to P3) .

Producers' share + Consumers' share

= Government subsidy expenditure

Over to you… (HL only)

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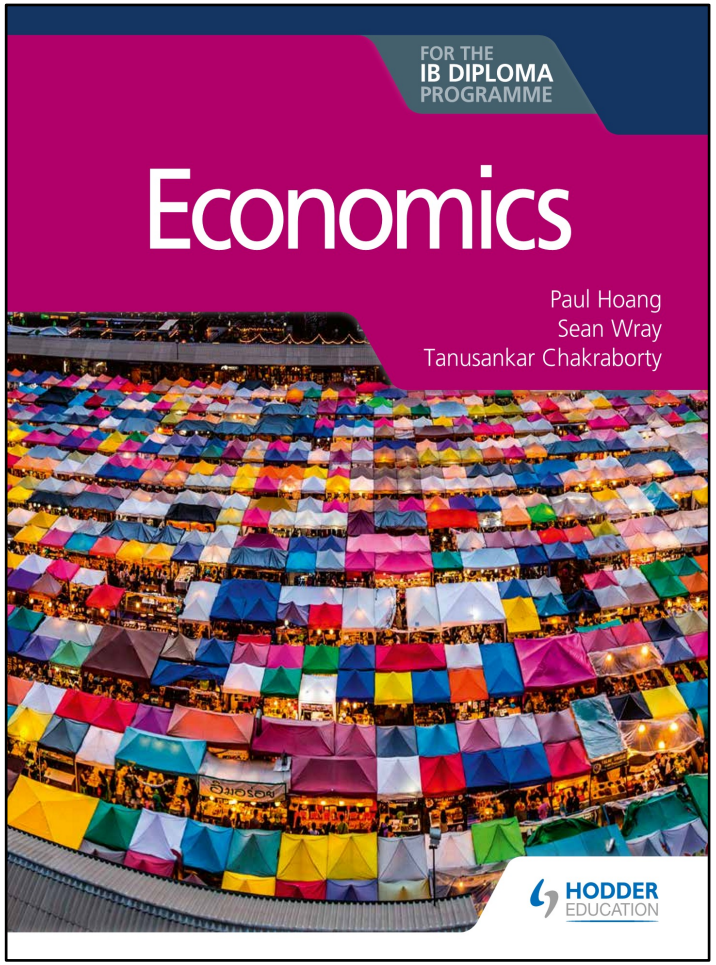
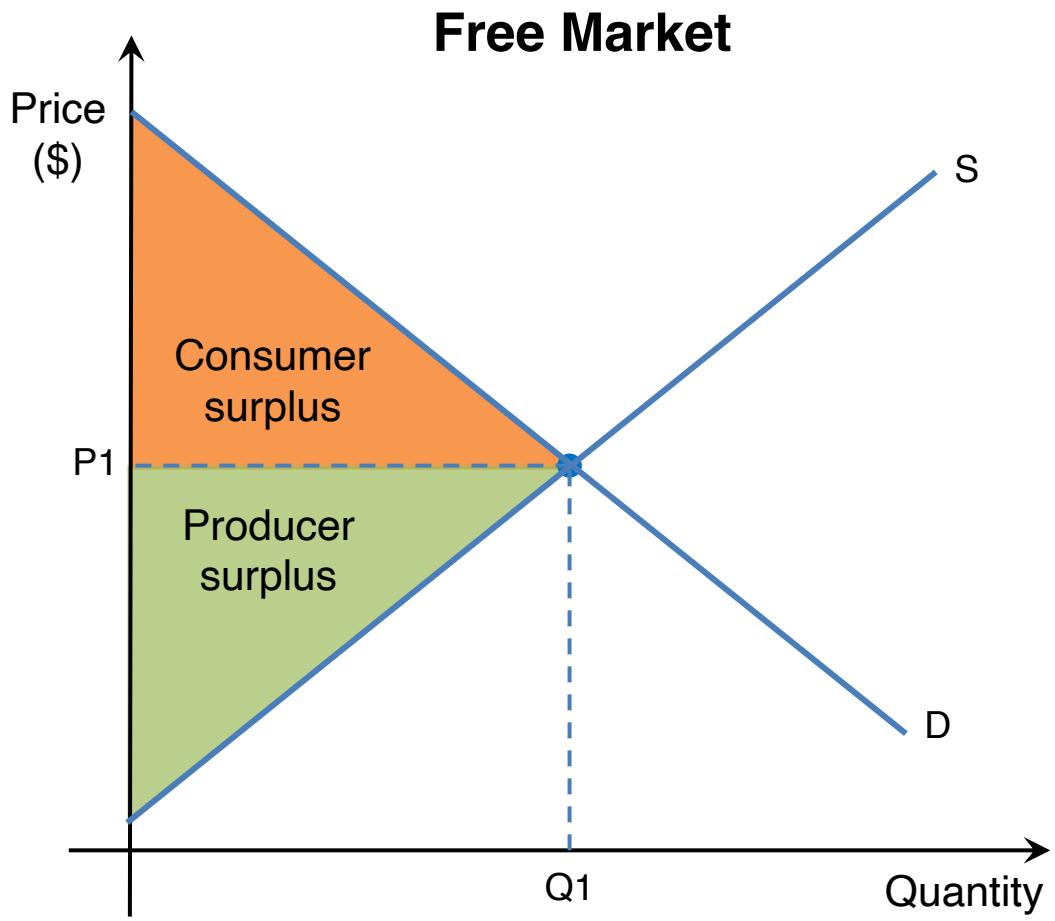
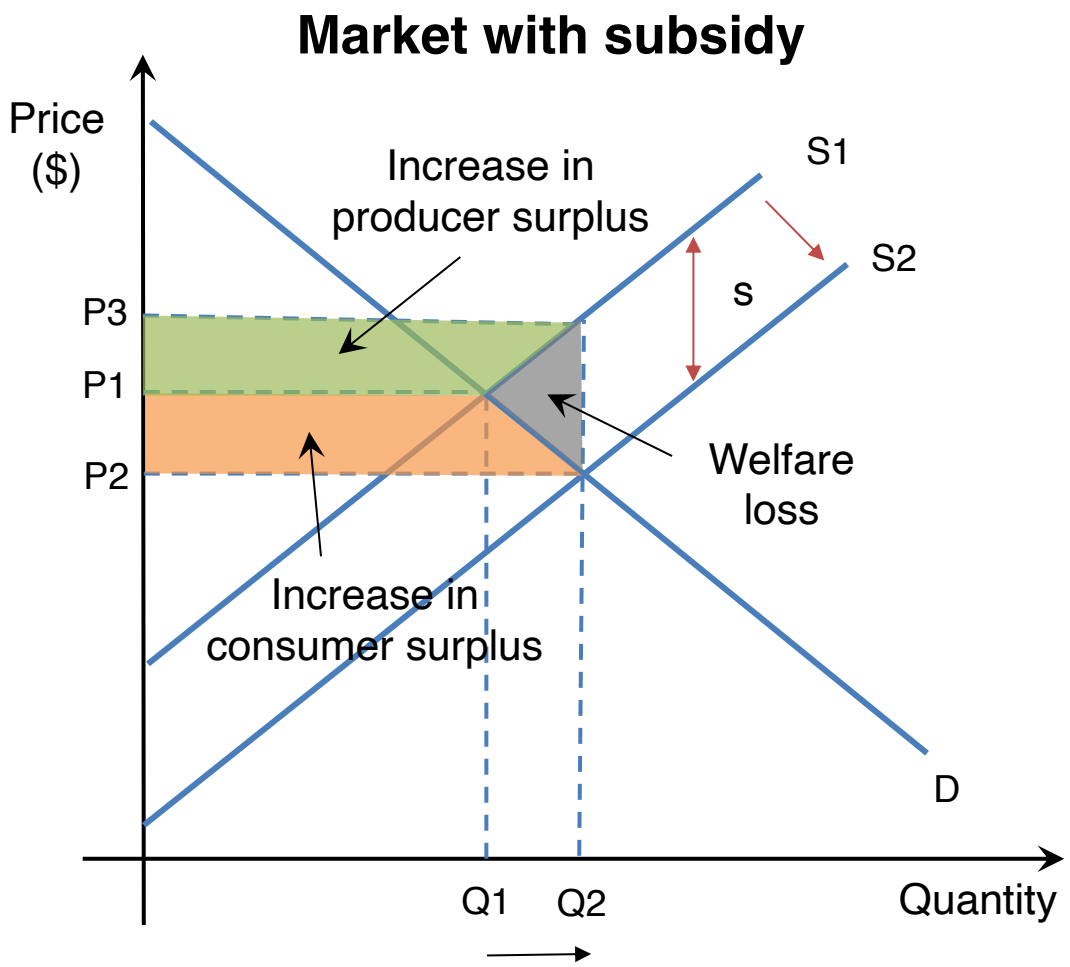
- Paper 3 Exam Practice Question 10.6
- [9 marks]



Subsidy – impacts on stakeholders





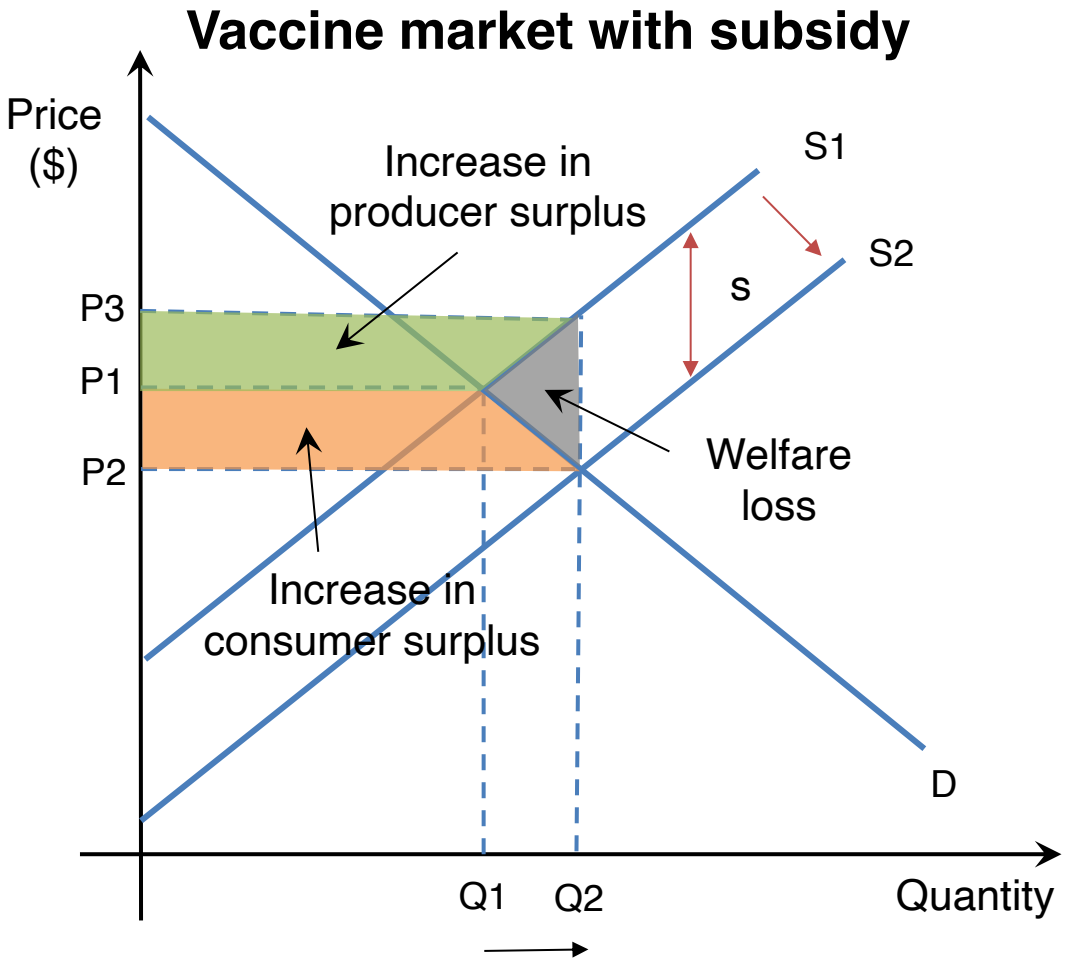
Impacts on stakeholders

Consumers

- Pay lower prices for greater quantities.
- Hence, there is an increase in consumer surplus.

Producers

- Receive a higher price per unit and sell a larger amount of output.
- Total revenue increases.
- Hence, there is also an increase in producer surplus.



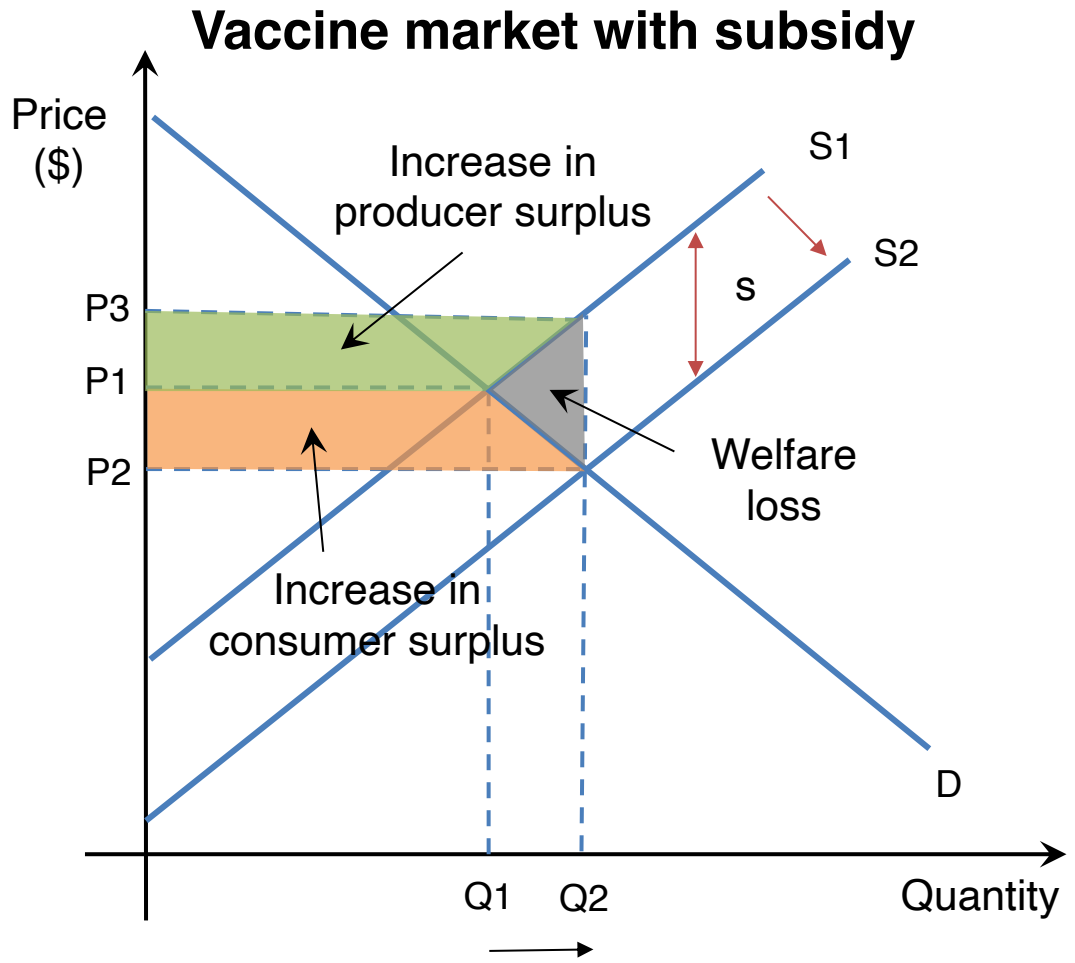
Impacts on stakeholders

Workers

- Increased output leads to increased demand for labour.
- Employment and wages increase, ceteris paribus.

Government

- Required to finance the subsidy expenditure.
- Opportunity costs arise from government expenditure.



Over to you… (HL only)

Hoang, Wray, & Chakraborty (2020)

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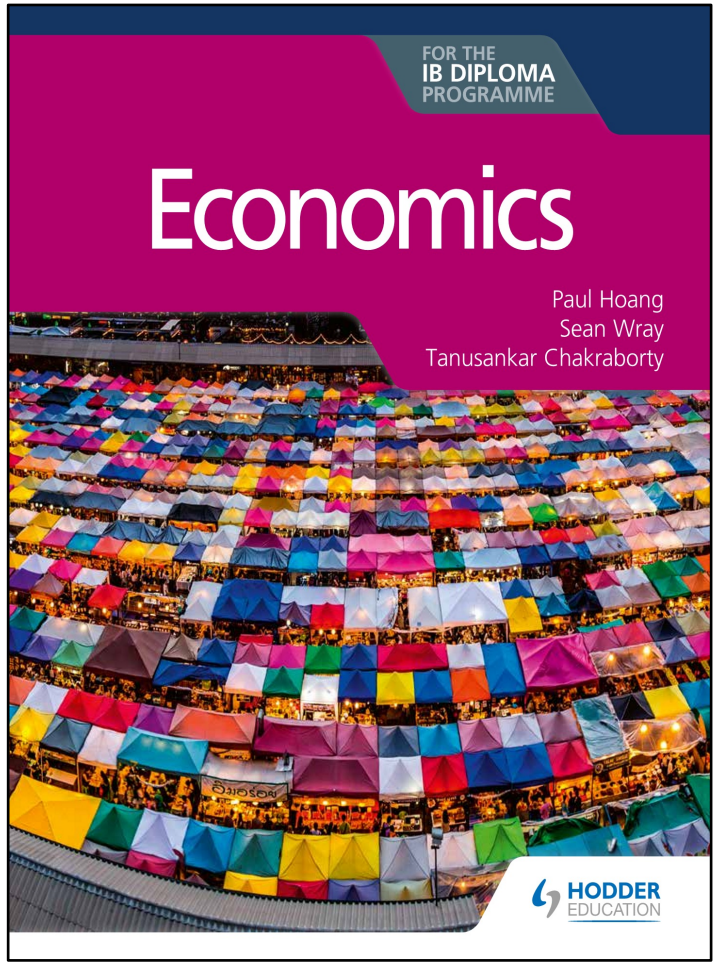
- Paper 3 Exam Practice Question 10.7
- [6 marks]



Test your knowledge on this unit: Kahoot!

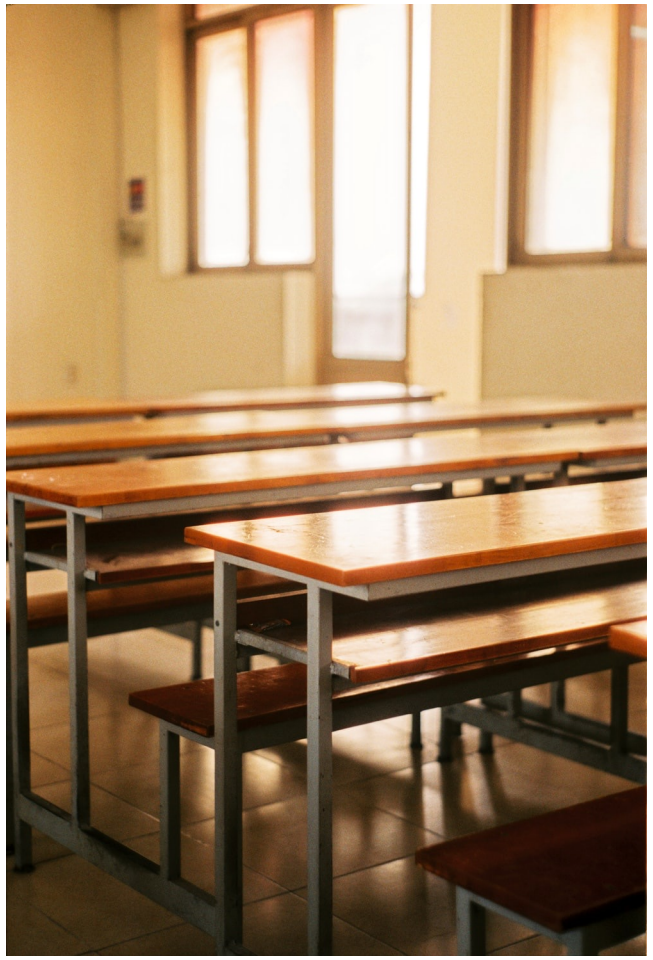
Direct provision of services

Direct provision of services

Public and merit goods are often under consumed/produced in a free market. **Direct provision** occurs when the government directly supplies goods or services in the best interest of society.

Direct provision of services

- Public healthcare services, e.g., vaccinations
- National defense and security
- State-funded primary and secondary schools
- Public broadcasting systems



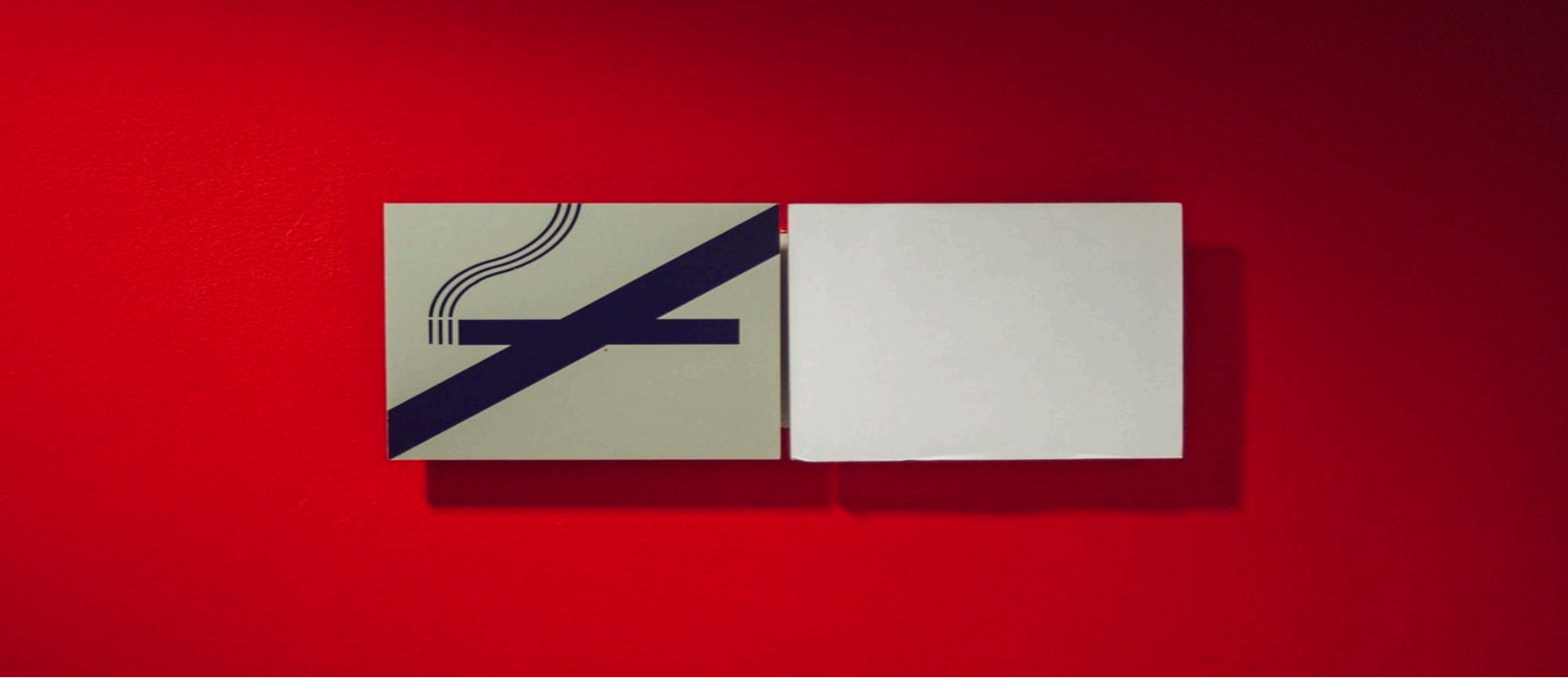
Brainstorm other examples of goods and services which are directly provided by the government.

Goods and services provided by the government are not necessarily free.

Provision of public goods

Public goods are provided by the government, as the free market fails to create incentives for firms to produce these goods. Private firms cannot prevent “free riders” using public goods without paying. Hence, the government provides these goods, funded by tax revenues. (More details will be covered in unit 2.9)

What are some examples of public goods?



Command and control regulation and legislation

Real world example

1. How does increasing the legal drinking age affect the demand for alcohol?
2. Why do you think the US government enforces this regulation?

Command and control regulation and legislation

Command and control regulation and legislation refer to the laws governing certain activities or industries. This aims to enforce or prevent certain behaviour that is seemed socially desirable.

Command and control regulation and legislation

Examples may include:

- Laws requiring car manufacturers to install airbags and other safety measures
- Laws requiring passengers to wear seat belts
- Environmental protection laws that limit the quantities of pollutants
- Laws banning smoking and drinking in public areas
- Minimum age laws for the purchase of demerit goods
- Laws prohibiting the advertising of demerit goods.

Command and control regulation and legislation

To comply with command and control (CAC) regulation and legislation, firms often incur increased production costs.

For example, firms incur additional costs when forced to manage different types of waste rather than disposing everything in landfill.

Limitations of the regulation and legislation

- The production costs for firms increase, reducing their export competitiveness and potentially leading to job losses in the industry.
- There are no incentives for firms to improve the quality of their production.
- CAC policies apply to all firms in the industries. Larger multinational firms find it easier to comply with the rules, while smaller firms may incur greater costs in meeting the standards.

Consumer nudges (HL only)

Consumer nudges (HL only)

Nudge theory is an aspect of choice architecture which aims to influence consumer behaviour and steer consumers towards desirable actions without restricting their freedom.

Examples of consumer nudges (HL only)

- Speed warning signs and high-speed cameras nudge drivers to comply with speed limits on roads.
- Using technology to encourage recycling, such as the smartphone app RecycleNation.

Further reading

How The British Government Got More Citizens To Pay Their Taxes On Time

Test your knowledge on this unit: Kahoot!