Your notes

HL IB Economics

4.2 Types of Trade Protection

Contents

Your notes

An Introduction to Protectionism

- Free trade aims to maximise global output through **national specialisation**

- However, there are numerous **reasons** why countries would seek to **limit free trade** in order to protect themselves from certain outcomes

- This is called **protectionism** and may take the form of import tariffs, export subsidies, the use of quotas or embargoes

An Explanation of Tariffs

- The most commonly used forms of **trade protectionism** include tariffs, subsidies, quotas and administrative barriers

- **A tariff is a tax on imported goods/services (customs duty)**

  - The tax raises the selling price of the good/service within the country

- The higher price allows more **inefficient domestic firms** to increase their production and market share

  - More efficient global competitors reduce their output due to the tariff

  - With increased domestic output, **employment** may increase
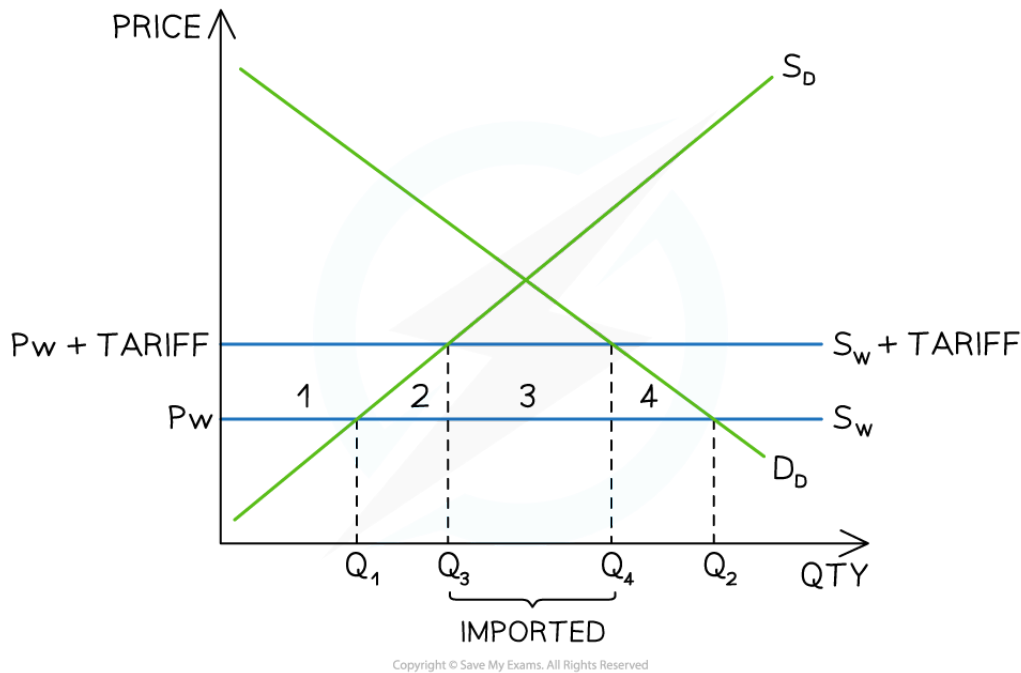
A tariff raises the price of the world supply from P_W to P_W + Tariff. This reduces the quantity of imports from Q_1Q_2 to Q_3Q_4

Diagram Analysis

- **World supply (S_W)** is considered to be infinite and this supply curve is included with the domestic demand (D_D) and supply (S_D) curves

- The **pre-tariff** market equilibrium is seen at P_wQ_2

  - Domestic firms supply up to Q_1 at a price of P_w

  - Foreign firms supply the difference equal to Q_1Q_2 at a price of P_w (imports)

- **After the tariff** is imposed, the world price increases from P_w to P_w+ tariff

- The **new market equilibrium** is seen at P_w+tariff and Q_4

  - Following the law of demand, the **quantity demanded contracts** from Q_2 to Q_4

  - Following the law of supply, the **quantity supplied** by domestic firms **extends** from Q_1 to Q_3

  - The level of **imports is reduced** from Q_1Q_2 to Q_3Q_4

An Evaluation of Tariffs

- The best way to consider the **impact of a tariff** on stakeholders is to explain it using a diagram
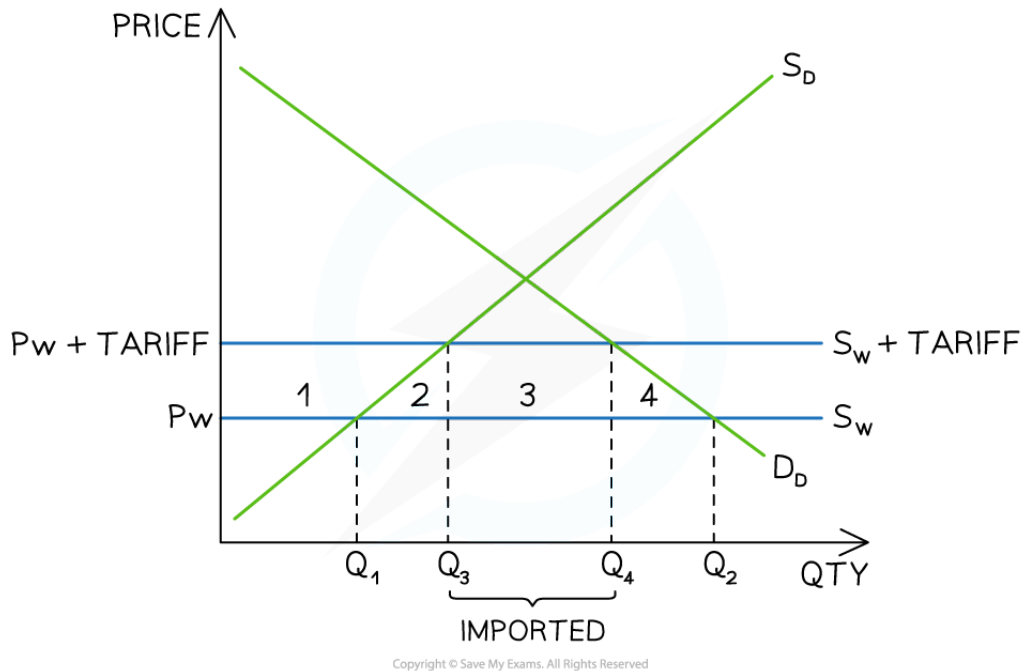
A tariff impacts domestic producers, consumers, foreign producers and the government

The Impact of Tariffs on Stakeholders

| Stakeholder	Explanation of Impact
Domestic Producers	- **Before the tariff** domestic producers produced output equal to $0Q_1$ and their revenue was equal to $P_w \times Q_1$ - **After the tariff** was imposed domestic producers produced $0Q_3$ and their revenue was equal to $P_w + tariff \times Q_3$ - Domestic **producer surplus** has increased by area 1
Foreign Producers	- **Before the tariff** foreign producers sold output equal to Q_1Q_2 and their revenue was equal to $P_w \times (Q_2 - Q_1)$

	• **After the tariff** was imposed foreign producers sold output equal to Q_3Q_4 and their revenue was equal to $P_w \times (Q_4 - Q_3)$ • Foreign **producer surplus** has decreased by the areas underneath 2 and 4
Domestic Consumers	• **Before the tariff** domestic consumers consumed Q_2 products at a price of P_w • **After the tariff** domestic consumers consumed **fewer products** (Q_4) at a **higher price** of P_w+tariff • Domestic **consumer surplus** has decreased by areas 1, 2, 3 and 4 • Some consumers have been priced out of the market (contraction of quantity demanded from $Q_2 \rightarrow Q_4$
The Government	• **After the tariff** is imposed the government receives **tax revenue** equal to $((P_w + \text{tariff}) - Pw) \times (Q_4 - Q_3)$ ▪ This is equal to area 3
Downstream Producers	• Other producers who rely on the imported product as a **raw material** in their own production process, now have to pay more for it as prices are higher • This increases their **costs of production** • They may have to reduce output which could impact **unemployment levels** and government tax receipts in their industry
Society (welfare loss)	• **Less efficient** domestic firms are now producing at the expense of more efficient foreign producers – there is a welfare loss equal to area 2 • Consumers are frustrated with the higher prices and there is no longer **allocative efficiency** – there is a welfare loss equal to area 4 • The net welfare loss is equal to areas 2 and 4

WORKED EXAMPLE

The diagram below illustrates Ukraine's wheat market. The EU implemented a 20 % tariff on the price for wheat which was selling at US$6.00 per kilogram. S is EU domestic supply, D is EU domestic demand, Sw is world supply and St is world supply with the tariff.

Your notes
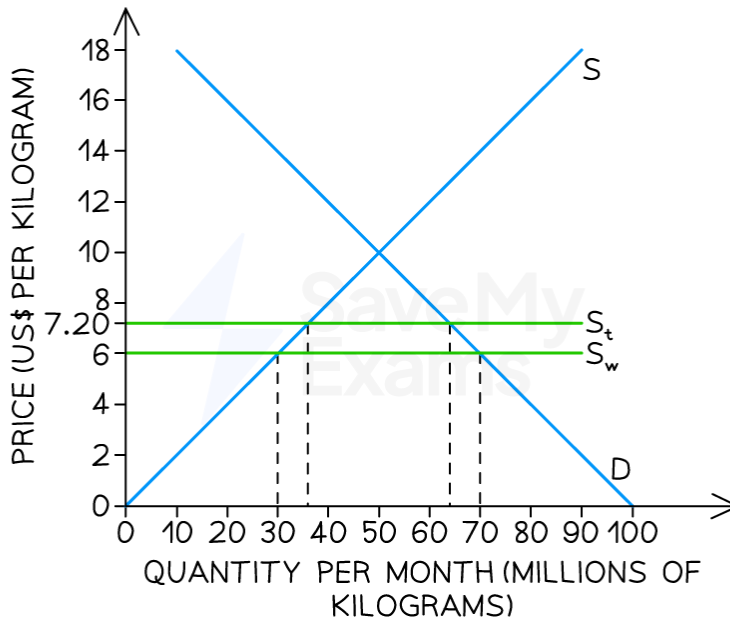
Answer:

Using information from the diagram

a) Calculate the consumer surplus prior to the imposition of the tariff [2]

Step 1 – Identify the market equilibrium without a tariff

(70m kg's, $6)

Step 2 – Calculate the area of the consumer surplus

It is split into two parts – a rectangle and a triangle

$$Area\ of\ triangle\ =\ \frac{b\ x\ h}{2}\ +\ area\ of\ rectangle\ =\ L\ x\ B$$

$$Area\ of\ triangle\ =\ \frac{60m\ x\ 12}{2}\ +\ area\ of\ rectangle\ =\ 12\ x\ 10m$$

$$Area\ of\ triangle\ =\ 360\,m\ +\ area\ of\ rectangle\ =\ 120\,m$$

$$Consumer\ surplus\ =\ \$480\,m$$

[1 mark for any correct working and 1 mark for correct answer]

b) Calculate the producer surplus prior to the imposition of the tariff [2]

Step 1 – Identify & calculate the area of the domestic producer surplus

Domestic producers produce up to 30m kg's at a price of $6

$$Producer\ surplus\ =\ \frac{b\ x\ h}{2}$$

$$Producer\ surplus\ =\ \frac{30m\ x\ 6}{2}$$

$$Producer\ surplus\ =\ \$90m$$

[1 mark for any correct working and 1 mark for correct answer]

c) Calculate the consumer surplus after the imposition of the tariff [2]

Step 1 – Calculate the loss in consumer surplus as a result of the tariff

After the tariff, the price is $7.20 and the quantity 64m kg's

Consumer surplus lost = the trapezoid formed between S_w and S_t

$$Area\ =\ \frac{a\ +\ b}{2}\ x\ h$$

$$Area\ =\ \frac{64m\ +\ 70m}{2}\ x\ 1.20 \quad \text{[1 mark]}$$

$$Area\ =\ 80.4m$$

Step 2 – Subtract the loss of consumer surplus from the original consumer surplus (answer for a)

$$New\ consumer\ surplus\ =\ \$480m\ -\ \$80.4m$$
$$\text{[1 mark]}$$
$$New\ consumer\ surplus\ =\ \$399.60m$$

d) Calculate the producer surplus after the imposition of the tariff [2]

Step 1 – Identify & calculate the new area of the domestic producer surplus

After the tariff, domestic producers produce up to 36m kg's at a price of $7.20

$$\text{Producer surplus} = \frac{b \text{ x } h}{2}$$

$$\text{Producer surplus} = \frac{36m \text{ x } 7.20}{2}$$

$$\text{Producer surplus} = \$129.60m$$

[1 mark for any correct working and 1 mark for correct answer]

e) Government revenue after the imposition of the tariff [2]

Step 1 – Identify the area of Government tax revenue

It is the rectangle formed between S_w and S_t – and the two quantity points (36m, 64m)

Step 2 – Calculate the area of the tax rectangle

$$\text{Tax revenue} = L \text{ x } B$$

$$\text{Tax revenue} = (64m \text{ kg's} - 36m \text{ kg's}) \text{ x } 1.20$$

$$\text{Tax revenue} = \$33.6m$$

[1 mark for any correct working and 1 mark for correct answer]

f) The welfare loss caused by the imposition of the tariff [2]

Step 1 – Identify the two welfare loss triangles

The welfare loss is represented by the two small triangles either side of the government tax revenue rectangle

Triangle to the right represents inefficiencies from domestic producers

Triangle to the left represents frustrated consumers who are priced out of the market

Step 2 – Calculate the area of each triangle and add them together

Your notes

$$\text{Welfare loss} = \frac{\text{b x h}}{2} + \frac{\text{b x h}}{2}$$

$$\text{Welfare loss} = \frac{\text{6m x 1.2}}{2} + \frac{\text{6m x 1.2}}{2}$$

$$\text{Welfare loss} = \$7.2\text{m}$$

[1 mark for any correct working and 1 mark for correct answer]

Remember to check the units on the graph (and use them!). Consumer and producer surplus and welfare loss are always monetary values. Don't forget to round your answers to 2 decimal places

EXAMINER TIP

Tariffs are one of the most frequently examined sub-topics in Paper 2. When evaluating their use, consider how many jobs are protected (or created) in the industry that is targeted by the tariff as opposed to jobs which may be lost in multiple downstream industries due to higher prices.

For example, a tariff on solar panel imports protects a few firms who manufacture solar panels. However, the higher prices can cause a significant fall in the quantity demanded leading to the possible loss of thousands of jobs for installation experts.

4.2.2 Quotas

An Explanation of Quotas

- **A quota is a physical limit on imports** e.g. in June 2022 the UK extended its quota on **steel imports** for a further two years in order to protect employment in the domestic steel industry

- This limit is usually set **below the free market** level of imports

  - As cheaper imports are limited, a quota **raises the market price**

  - As cheaper imports are limited a quota **may create shortages**

- Some domestic firms benefit as they are able to **supply more** due to the lower level of imports

  - This may increase the level of employment for domestic firms
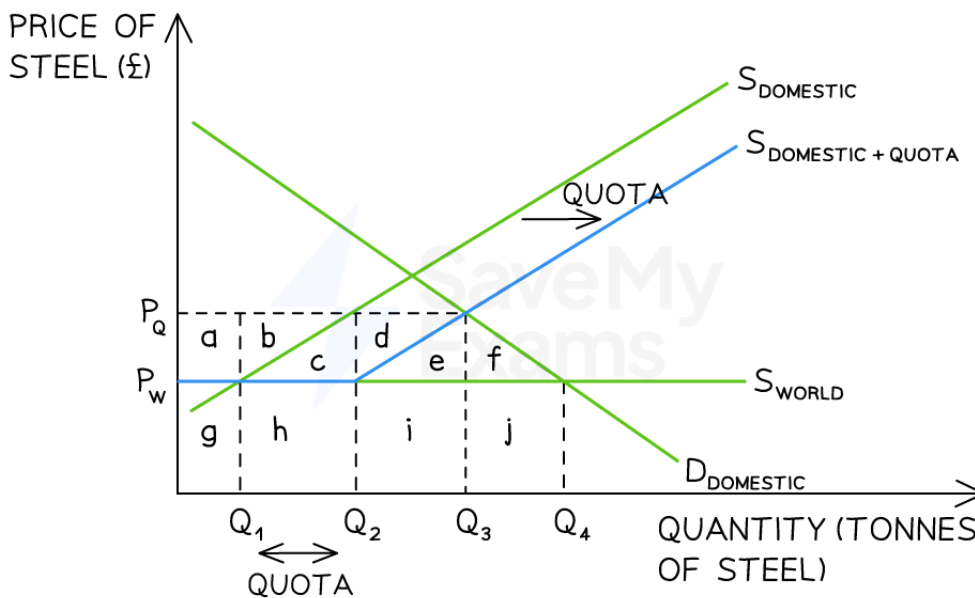
A quota on steel imports reduces the equilibrium quantity from $Q_4 \rightarrow Q_3$ and raises the market price from $P_w \rightarrow P_q$

Diagram Analysis

- The initial **market equilibrium** is at P_wQ_4

Your notes

- Domestic firms supply up to Q_1 and **Q_4–Q_1 is imported**

- To support the domestic steel industry, the UK government **limits the amount of imports** by instituting a quota

  - The **domestic supply curve (S_d)** shifts to the right by the size of the quota (Q_2-Q_1)

  - Where this curve crosses the domestic demand curve (Dd) it forms the **new market equilibrium at P_qQ_3**

  - The quota has raised prices and reduced total output from $Q_4 \rightarrow Q_3$

  - Domestic producers supply up to Q_1 **PLUS** Q_3-Q_2

  - Foreign producers supply Q_2-Q_1 (the quota)

- Once governments **announce the quota level,** the market automatically prices in the reduced output

  - This means that each unit of output is sold at the quota price (Pq)

  - Both domestic producers and foreign producers receive a higher price for their steel

EXAMINER TIP

One of the main reasons that the quota diagram is confusing is because it appears that domestic producers supply up to Q_1, then take a holiday while the imports flood in until Q_2 is reached, after which they continue to supply up until Q_3. This is not how it works in reality.

1. The government announces the quota for the next 12 months
2. The market factors in the reduced supply and a new market price is established
3. Even while domestic firms are selling their products, importers continue to import the foreign product for as long as there i any quota allowance left
4. The government keeps track of the level of imports and once the quota level is reached, they will not allow any more imports of that product to enter the country
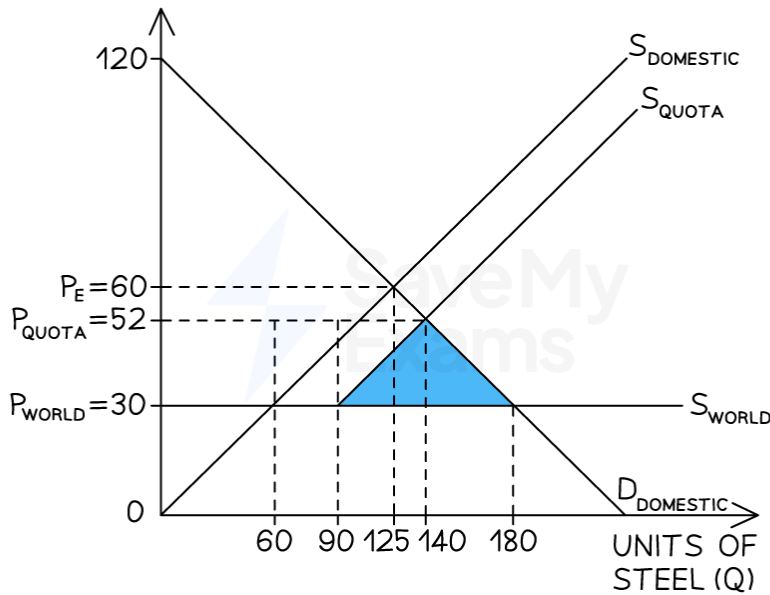
WORKED EXAMPLE

The diagram below illustrates United Kingdom's steel market. The UK implemented a quota on the market for steel. SD is UK domestic supply, DD is UK domestic demand, Sw is world supply and Squota is the world supply with the quota

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Answer:

Using information from the diagram

a) Calculate the change in consumer expenditure as a result of the imposition of the quota [2]

Step 1: Calculate the consumer expenditure before the quota

$$= P_{world} \times world\ D_{domestic}$$

$$= £30 \times 180$$

$$= £5,400$$

Step 2: Calculate the consumer expenditure after the quota

$$= P_{quota} \times Quota\ demand$$

$$= £52 \times 140$$

$$= £7,280$$

Step 3: Calculate the difference between the two figures

$$£7,280 - £5,400 = £1,880$$

Consumer expenditure has increased by £1,880 as a result of the quota

Your notes

[1 mark for any correct working and 1 mark for correct answer]

b) Calculate the change in domestic producer revenue as a result of the imposition of the quota [2]

Step 1: Calculate the domestic producer revenue before the quota

$$= Pworld \times Sdomestic$$

$$= £30 \times 60$$

$$= £1,800$$

Step 2: Calculate the domestic producer revenue after the quota

$$= £52 \times 110 \ (60 + 50 \ units)$$

$$= £5,720$$

Step 3: Calculate the difference between the two figures

$$£5,720 - £1,800 = £3,920$$

Domestic producer revenue has increased by £3,920 as a result of the quota

[1 mark for any correct working and 1 mark for correct answer]

c) Calculate the change to foreign producer revenue as a result of the imposition of the quota [2]

Step 1: Calculate the foreign producer revenue before the quota

$$= Pworld \times Worldsupply$$

$$= £30 \times 120$$

$$= £3,600$$

Step 2: Calculate the foreign producer revenue after the quota

$$= £52 \times 30$$

$$= £1,560$$

Step 3: Calculate the difference between the two figures

$$£3,600 - £1,560 = £2,040$$

> Foreign producer revenue has decreased by £2.040 as a result of the quota
>
> **[1 mark for any correct working and 1 mark for correct answer]**
>
>
> Remember to check the units on the graph (and use them!).

An Evaluation of Quotas

- Quotas can be beneficial in that they are a **less confrontational method of protectionism** than tariffs as there is less of a penalty for trading partners

The Impact of Quotas on Stakeholders

Stakeholder	Explanation of Impact
Domestic Producers	- Before the quota, the domestic revenue was area **g** - After the quota, domestic revenue is greater covering areas **a+g+d+e+i**
Foreign Producers	- Before the quota, foreign producer revenue was area **h+i+j** - After the quota, foreign producer revenue is less covering areas **b+c+h** - Under the quota, they receive a **higher price** for all units sold at Pq but they sell fewer products
Domestic Consumers	- Consumers pay a **higher price (Pq)** than previously (Pw) which reduces their disposable income - Some consumers leave the market as they cannot afford the higher price **(contraction from $Q_4 \rightarrow Q_3$)**
The Government	- They gain some favour with the industry they are protecting - This policy **may create jobs** in the industry being protected and reduce the level of unemployment benefits required - The government **does not receive tax revenue** as they do when using a tariff
Downstream Producers	Other producers who rely on the imported product as a **raw material** in their own production process, now have to pay more for it as prices are higher

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|	
	- This increases their **costs of production** - They may have to reduce output which could impact **unemployment levels** and government tax receipts in their industry
Efficiency	**Global efficiency** has worsened as less efficient domestic producers are producing at the expense of more efficient foreign producers **(area e+f)**

Your notes

An Explanation of Export Subsidies

- Both **subsidies** and **export subsidies** lower the cost of production for **domestic firms**

  - They can increase output and **lower prices**

  - With lower prices their goods/services are **more competitive** internationally

  - If firms are able to meet all of the domestic demand (Dd) then the excess supply may be exported

  - Otherwise, the level of **imports will decrease**

  - The increased output may result in **increased domestic employment**

- Following the 2nd World War, the **European Union** subsidised food production and this has continued ever since

  - Once food security had been established within Europe, countries were able to start **exporting the excess supply** that subsidies generate
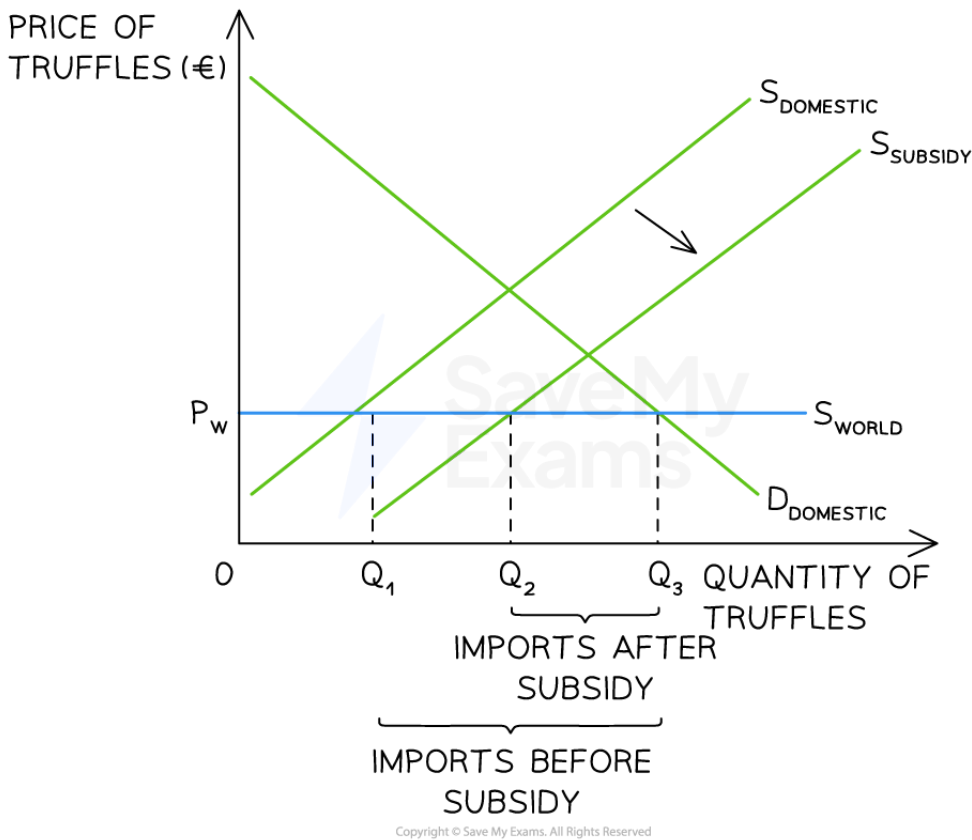
European Union subsidies for truffle producers shift the domestic supply curve to the right which decreases the level of truffle imports required from Q_1Q_3 to Q_2Q_3
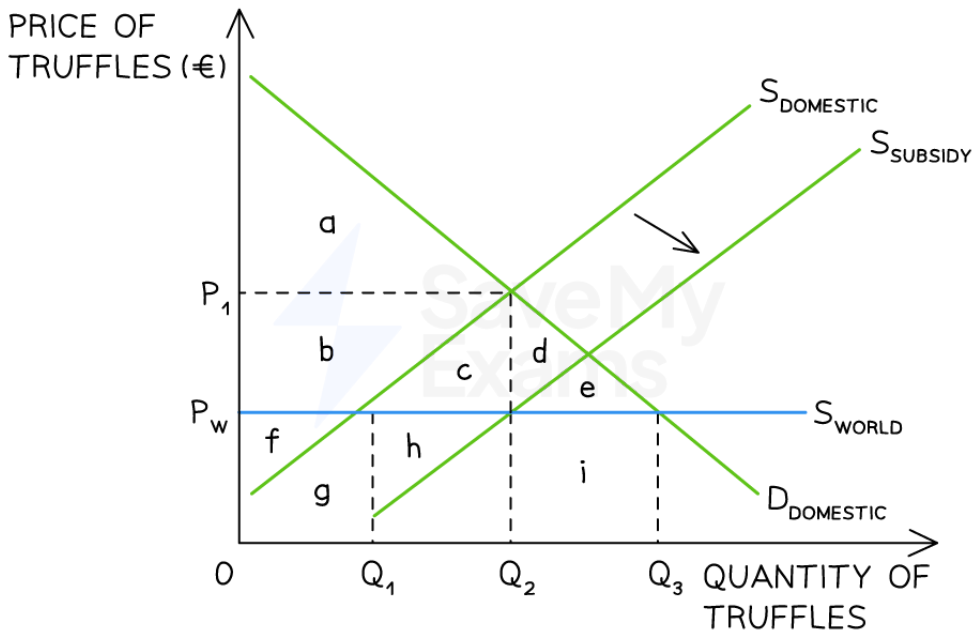
Diagram Analysis

- The domestic market for truffles in the EU was initially in **equilibrium at P_wQ_3**

  - Domestic firms supplied up to Q_1, while Q_2-Q_1 was imported into the EU

- The implementation of the subsidy **lowered firms costs of production**, shifting the domestic supply curve from S_d to S_d + subsidy

  - Domestic firms increase output and market share from $Q_1 \rightarrow Q_2$

  - Imports reduce from $Q_1Q_3 \rightarrow Q_2Q_3$

An Evaluation of Subsidies

- An evaluation of the **effectiveness of the use of subsidies** as a form of protectionism is best done by considering the impact on all of the relevant stakeholders

The effect on different stakeholders can be considered by analysing each area of the international subsidy diagram

- The stakeholders affected are domestic and foreign producers, consumers, government, and society (welfare)

An Evaluation of the use of Subsidies to Protect Domestic Firms

| Stakeholder	Explanation
Domestic Producers	- Decreases costs of production - Increases output from $Q_1 \rightarrow Q_2$ - Revenue before subsidy was **f+g** - Revenue after subsidy is **b+c+f+g+h**

	▪ Increases **international competitiveness**
Foreign Producers	▪ Makes it harder for them to compete with domestic firms ▪ Their exports reduce from $Q_3-Q_1 \rightarrow Q_3-Q_2$ ▪ **Revenue** for foreign firms before the subsidy was **h+i** ▪ Revenue after the subsidy is only **i**
Consumers	▪ Consumers already benefitted from the lower world price and receive no further benefit
Government	▪ This costs the government the amount of the subsidy - **area b+c** ▪ There is an **opportunity cost** associated with every subsidy provided
Society (Welfare)	▪ There is a **welfare loss (area c)** as more inefficient domestic producers are now producing at the expense of more efficient global producers

WORKED EXAMPLE

The diagram below illustrates the EU truffle market. Due to domestic pressures, the EU implemented a subsidy to truffle farmers. SD is EU domestic supply, DD is EU domestic demand, Sw is world supply and Ssubsidy is domestic supply with the tariff.
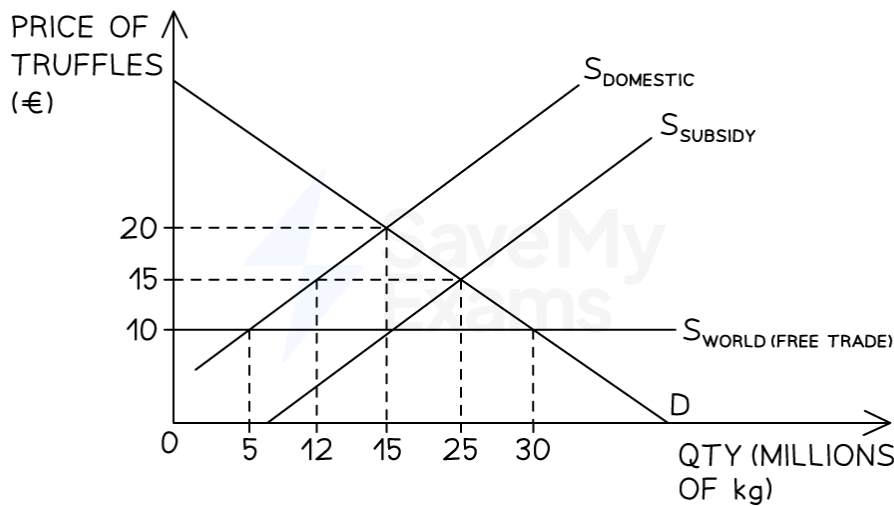
Answer:

Using information from the diagram

a) Calculate the cost of the subsidy to the government [2]

Step 1 – Identify the size of the subsidy and the quantity domestic producers supply with the subsidy

Size of subsidy = €10 per unit

Domestic producer supply = 15m Kg's

Step 2 – Calculate the subsidy spend by government

Total subsidy = €10 x 15m Kg's

Total subsidy = €150m

[1 mark for any correct working and 1 mark for correct answer]

b) Calculate the change to the quantity of imports [2]

Step 1 – Identify & calculate the original level of imports

= (30m kg's – 5m kg's)

= 25m kg's

Step 2 – Identify & calculate the new level of imports

= (30m kg's – 15m kg's)

= 15m kg's

Step 3 – Calculate the difference

= (25m kg's – 15m kg's)

= 10m kg's

The level of truffle imports has fallen by 10m kg's

[1 mark for any correct working and 1 mark for correct answer]

Your notes

c) Calculate the change to domestic producer revenue as a result of the subsidy [2]

Step 1 – Identify & calculate the original level of domestic producer revenue

$$= €10 \times 5m \text{ kg's}$$

$$= €50m$$

Step 2 – Identify & calculate the new level of domestic producer revenue

$$= €20 \times 15m \text{ kg's}$$

$$= €300m$$

Step 3 – Calculate the difference

$$= €300m - €50m$$

$$= €250m$$

Domestic producer revenue has increased by €250m

[1 mark for any correct working and 1 mark for correct answer]

EXAMINER TIP

When evaluating the use of subsidies in essay responses, it is worthwhile considering both the length of time that the subsidy has been in place, along with the size of the subsidy.

If the subsidy is large and has been in place for a long time, the industry is likely to be a global monopoly such as the USA cotton industry. Their price is effectively the world price.

This is one reason why the WTO aims to limit export subsidies. They put small-scale farmers in developing nations out of business, often decimating the industry and thus increasing unemployment. Compared to fifty years ago, very few African countries now produce cotton. This is entirely down to the size and longevity of the subsidies in the USA.

Your notes

Your notes

4.2.4 Administrative Barriers

An Explanation of Administrative Barriers

- There are many strategies that can be used to **create barriers to trade** using less obvious methods than tariffs, quotas and subsidies

  - **Health and safety regulations** e.g. in 2017 the EU put a new health regulation in place regarding the permitted level of *aflotoxins* in nuts. *Aflotoxin* levels are naturally higher in southern hemisphere countries and it effectively blocked the import of southern hemisphere nuts

  - **Product specifications** e.g. Canada specified that all jam imported into Canada needed to be in a certain size of the jar. Many countries do not usually manufacture jars in the required size

  - **Environmental regulations** e.g. in November 2021 new regulations were put in place in the EU and the USA to limit the amount of imports of 'dirty steel' – predominantly this is steel produced using coal-fired power stations which are prevalent in China

  - **Product labelling** can be expensive for firms to apply and may limit their desire to sell into certain markets

  - **Inefficient administrative systems** e.g. many border crossings in Africa still require physical paper copies to be submitted at each crossing with some companies claiming they have to provide in excess of 10,000 documents for a single journey