4.2 Types of trade protection

Learning objectives

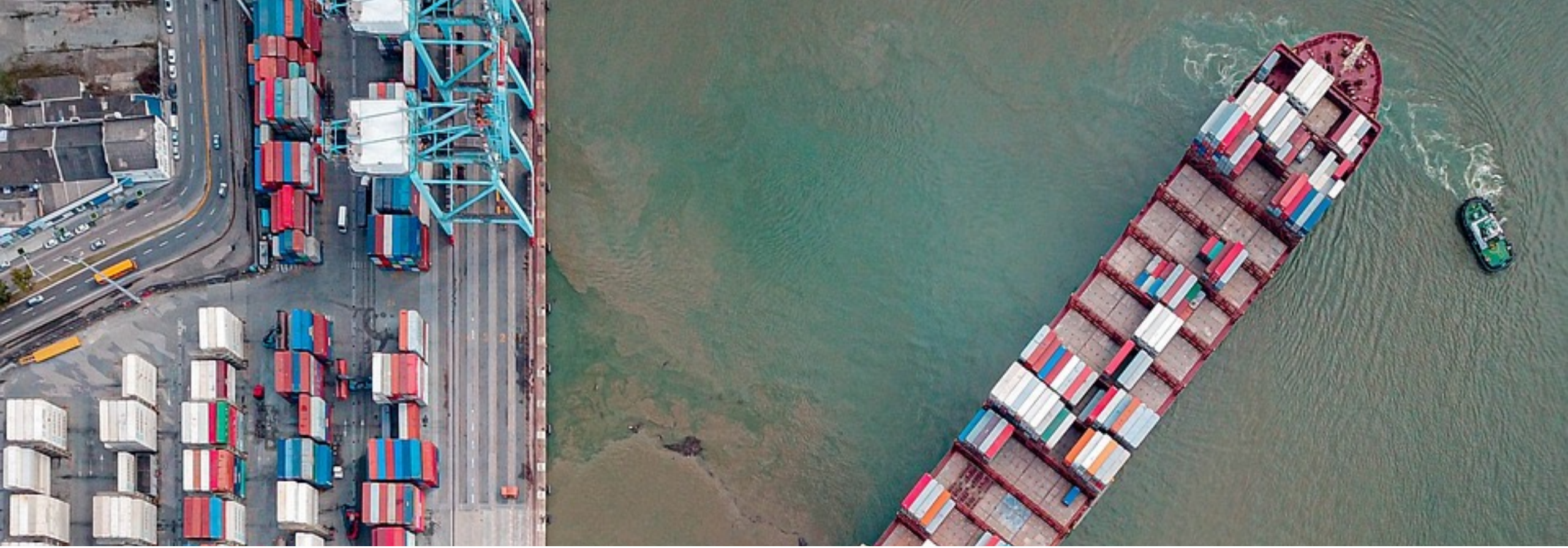
4.2 Types of trade protection	Depth	Diagrams and calculations
Tariffs • Effects on markets and stakeholders	AO3 AO4	Diagram: showing the effect of a tariff on price, production, consumption, expenditures, revenues, welfare
	AO4 (HL only)	**Calculation (HL only): from a diagram, the effects on stakeholders of tariffs**
Quota • Effects on markets and stakeholders	AO3 AO4	Diagram: showing the effect of a quota on price, production, consumption, expenditures, revenues, welfare
	AO4 (HL only)	**Calculation (HL only): from a diagram, the effects on stakeholders of quotas**

Learning objectives

4.2 Types of trade protection	Depth	Diagrams and calculations
Subsidy/export subsidy • Effects on markets and stakeholders	AO3 AO4	Diagram: showing the effect of a subsidy on price, production, consumption, expenditures, revenues, welfare
	AO4 (HL only)	**Calculation (HL only): from a diagram, the effects on stakeholders of subsidies**
Administrative barriers • Standards and regulations	AO3	Diagram: showing the effect of a quota on price, production, consumption, expenditures, revenues, welfare

Real world example

Outline the key concepts (WISE ChoICES) that may be related to this video.

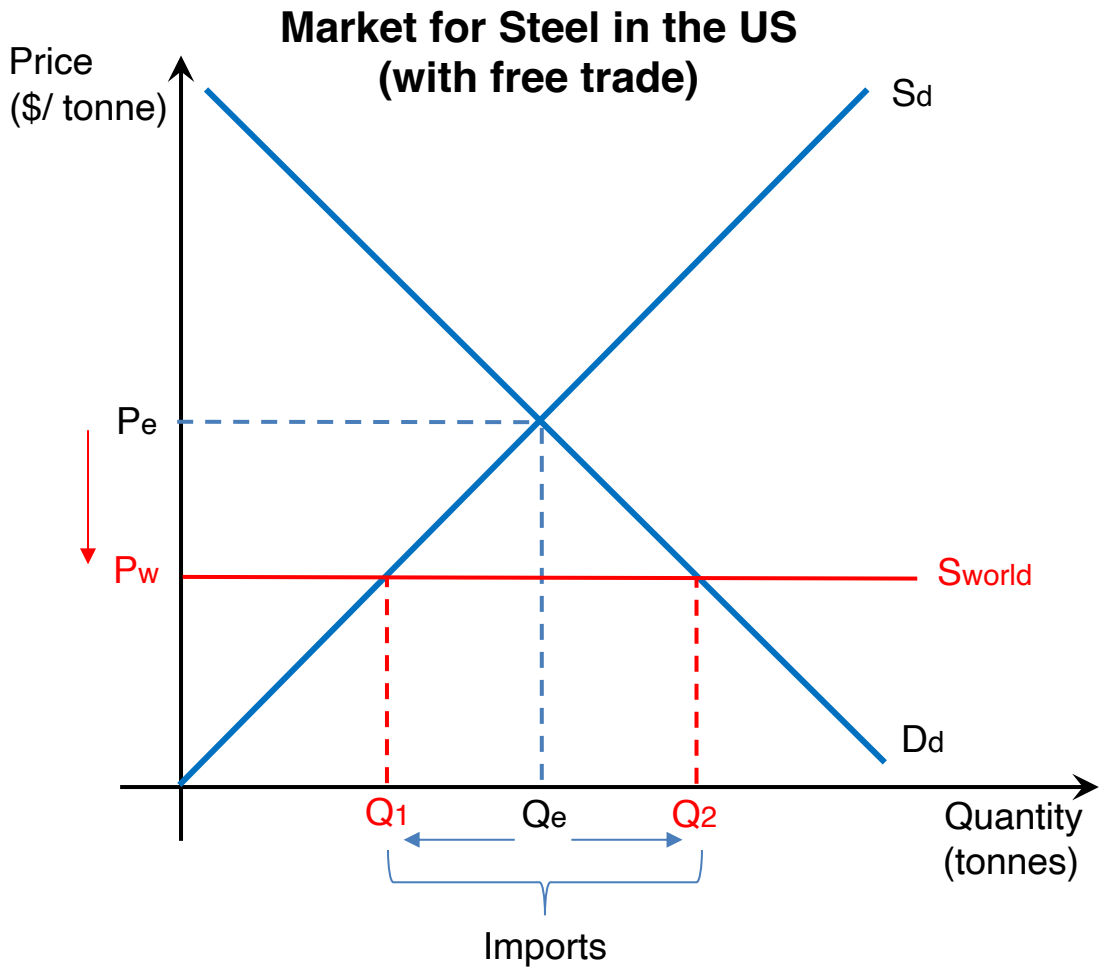


Trade protection

Trade protection refers to government policies which aim to restrict imports in order to protect domestic producers. This includes tariffs, quotas, subsidies, and administrative barriers.

Free trade recap

Under international trade where the world price P_w is less than the domestic price P_e:



US market price of steel falls from $P_e \rightarrow P_w$,

- Q_d increases from $Q_e \rightarrow Q_2$
- Q_s decreases from $Q_e \rightarrow Q_1$

There is a shortage of $Q_2–Q_1$ at P_w where the excess demand is imported from other countries.

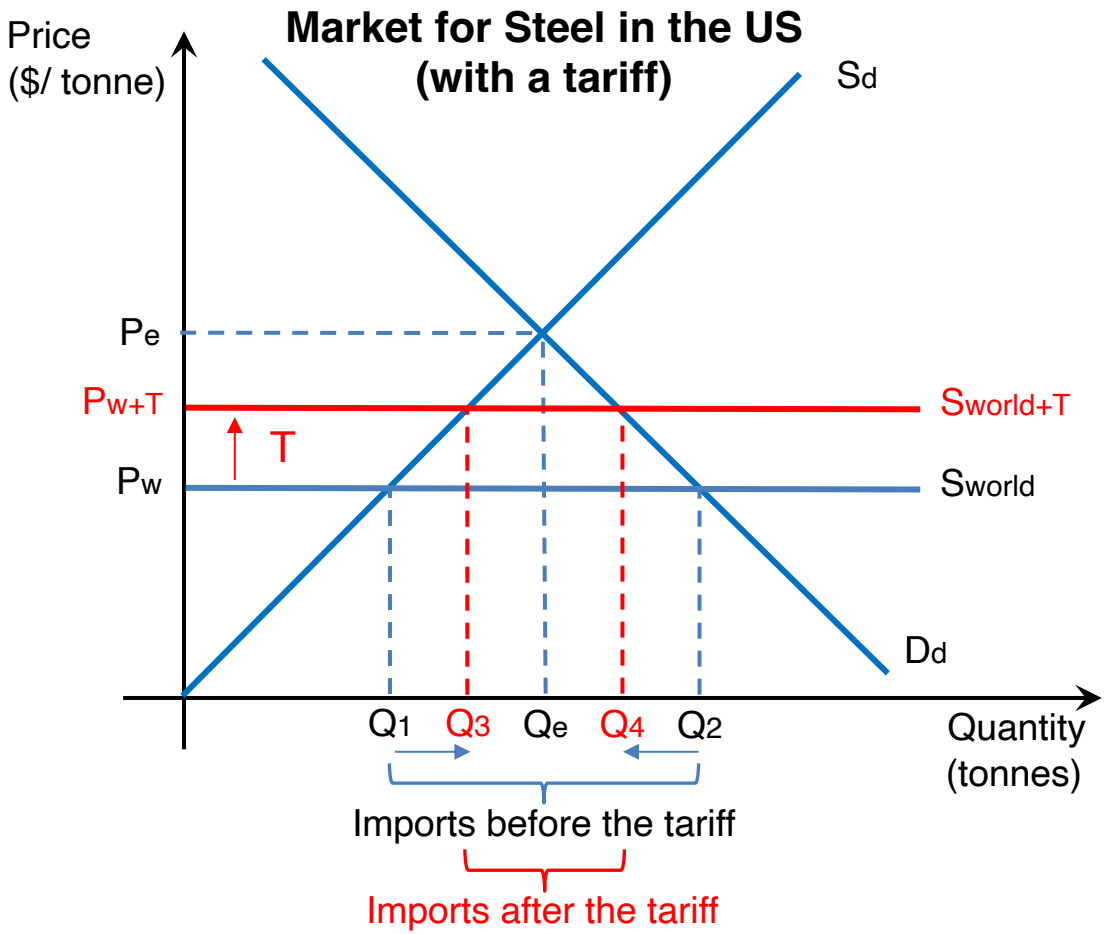
Trade protection aims to restrict imports in order to protect domestic producers.

Tariffs

Tariffs are taxes imposed on imports. Increasing the price of foreign imports makes domestic goods and services more price competitive and attractive for domestic consumers.

Tariffs

Suppose the US government imposes a tariff of T per tonne on all imported steel.



Due to the tariff,

- S_{world} shifts upwards by T to $S_{world+T}$
- Q_d decreases from Q_2 → Q_4
- Q_s increases from Q_1 → Q_3

The tariff causes the quantity of imports to fall from $Q_2–Q_1$ → $Q_4–Q_3$.

Tariffs – effects on stakeholders

Domestic producers are better off as they sell a higher quantity (Q_3) and at a higher price (P_{w+T}).

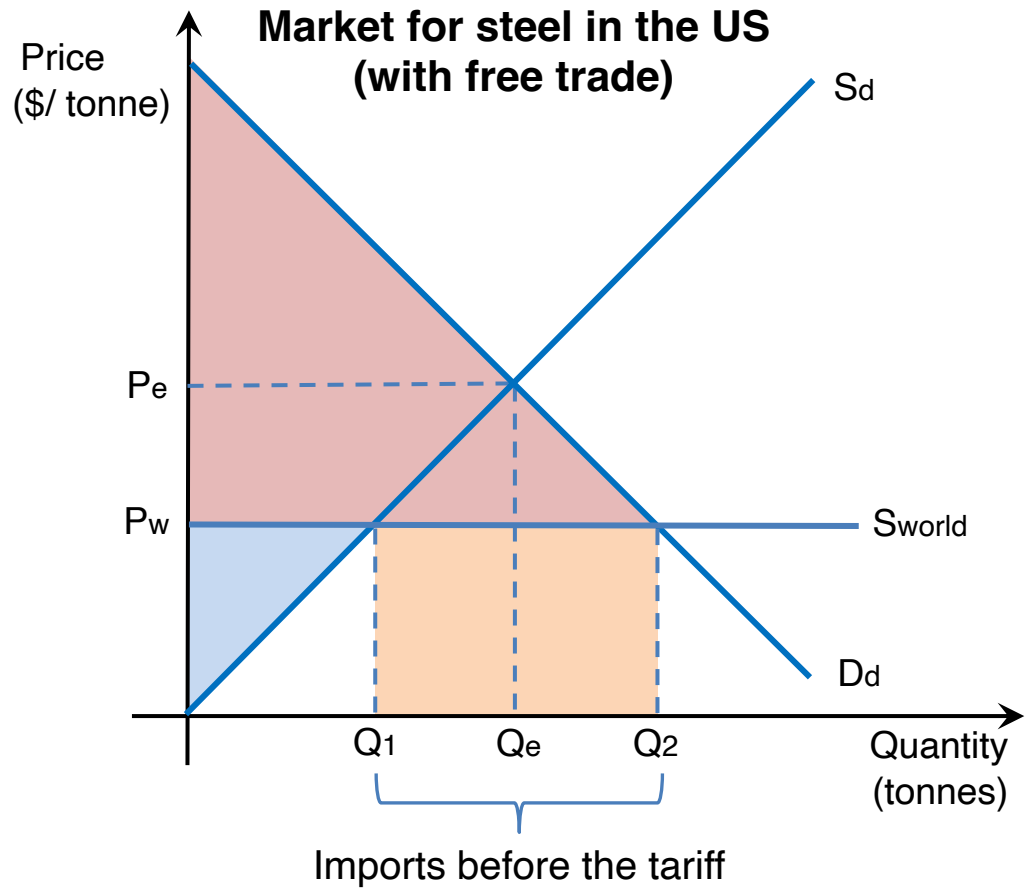
Consumers are worse off as they pay a higher price (P_{w+T}) for a lower quantity (Q_4).

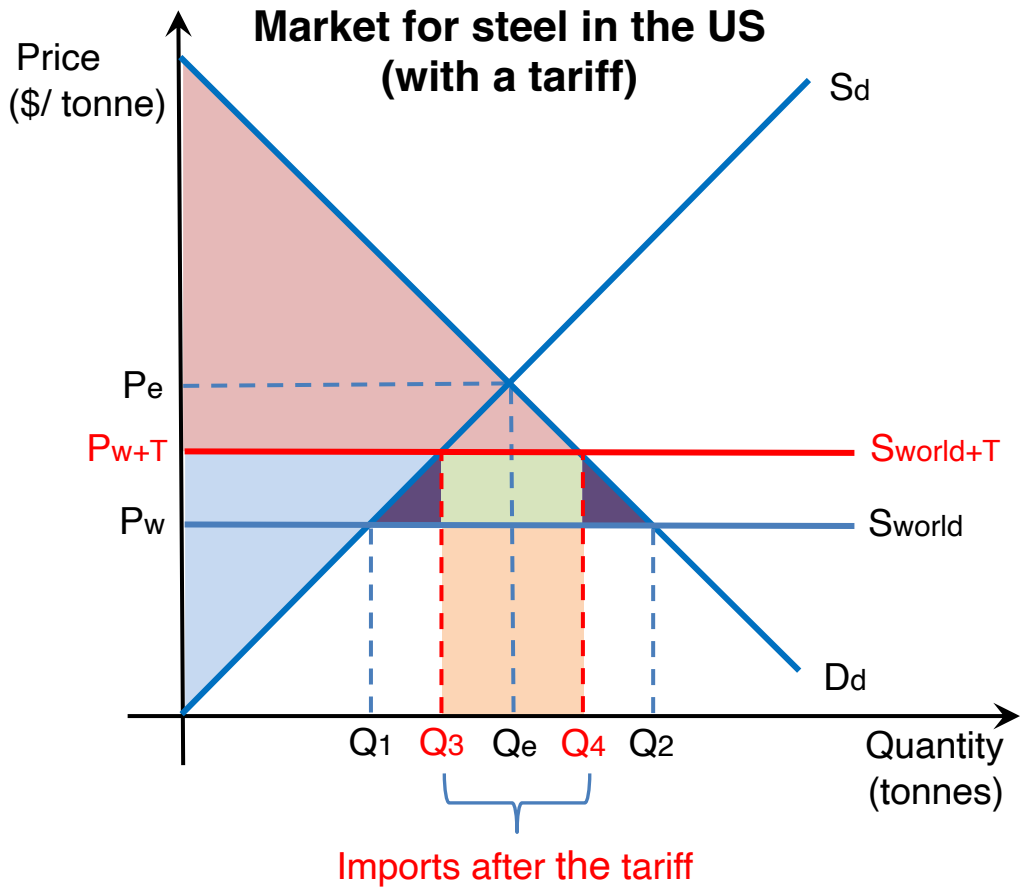
Foreign producers are worse off as they sell at a lower quantity at the same price.

The government earns tax revenue of $T \times (Q_4 – Q_3)$.

Total welfare decreases. More units are being produced by the relatively inefficient producers, and consumers must pay a higher price while consuming a lower quantity.

Tariffs – effects on stakeholders





Consumer surplus

Producer surplus

Foreign producer revenue

Government revenue

Welfare loss

Podcast: Steel Tariffs Produce Winners And Losers

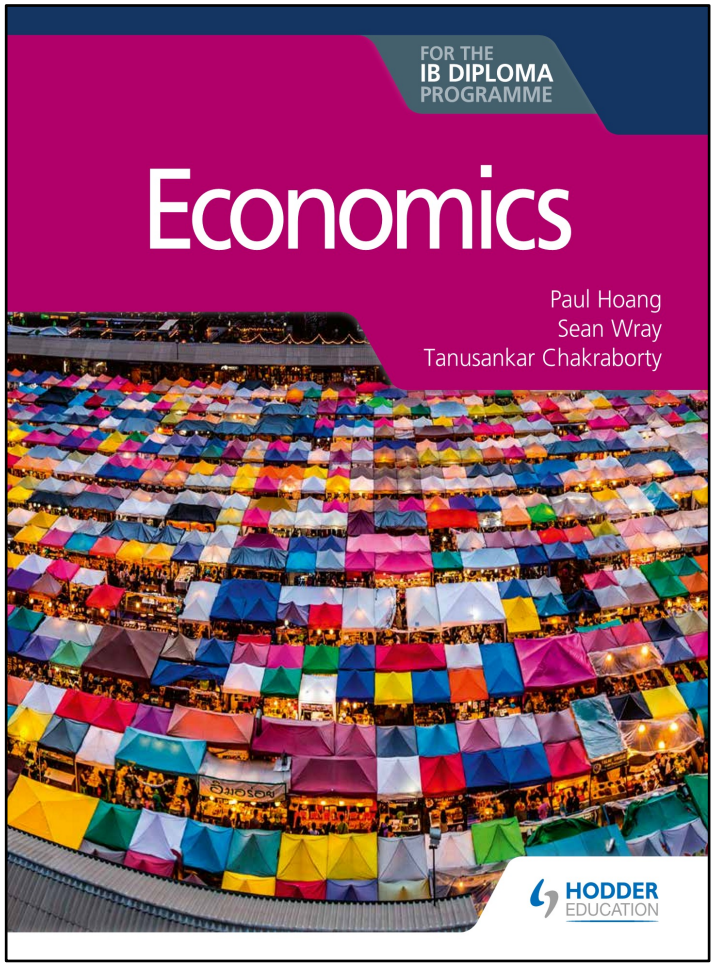
1. Explain why the US government imposed tariffs on imported steel.
2. Using examples from the podcast, explain the impact of the tariffs on different stakeholders.

Over to you…

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

- Page 440
- Paper 1 Exam Practice Question 28.1
- [10 marks]
- Paper 1 Exam Practice Question 28.2
- [15 marks]



Tariffs – calculating effects on stakeholders (HL only)

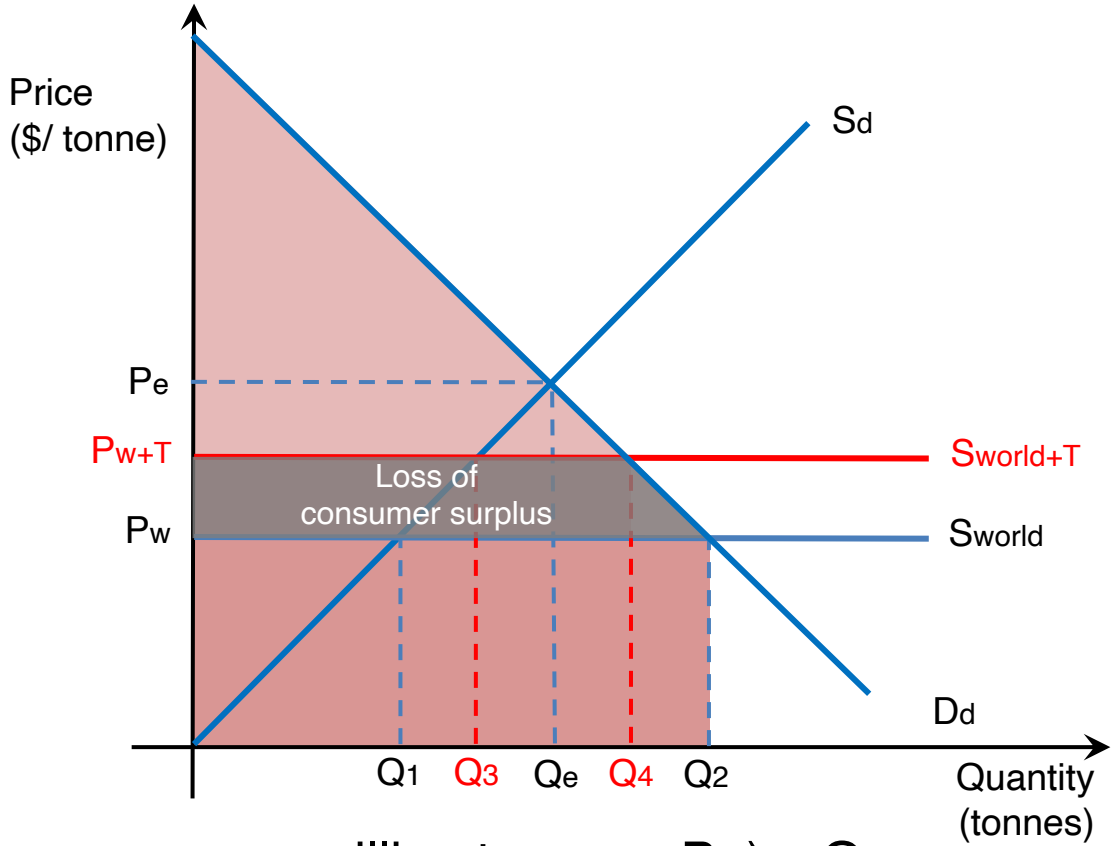
Consumers

Consumer expenditure

Consumer expenditure = Price × Quantity

Consumer expenditure before tariff = $P_w \times Q_2$

Consumer expenditure after tariff = $(P_{w+T}) \times Q_4$



Consumer surplus

$$\text{Consumer surplus before tariff} = \frac{(\text{Maximum price consumers are willing to pay} - P_w) \times Q_2}{2}$$

$$\text{Consumer surplus after tariff} = \frac{(\text{Maximum price consumers are willing to pay} - (P_{w+T})) \times Q_4}{2}$$

Tariffs – calculating effects on stakeholders (HL only)

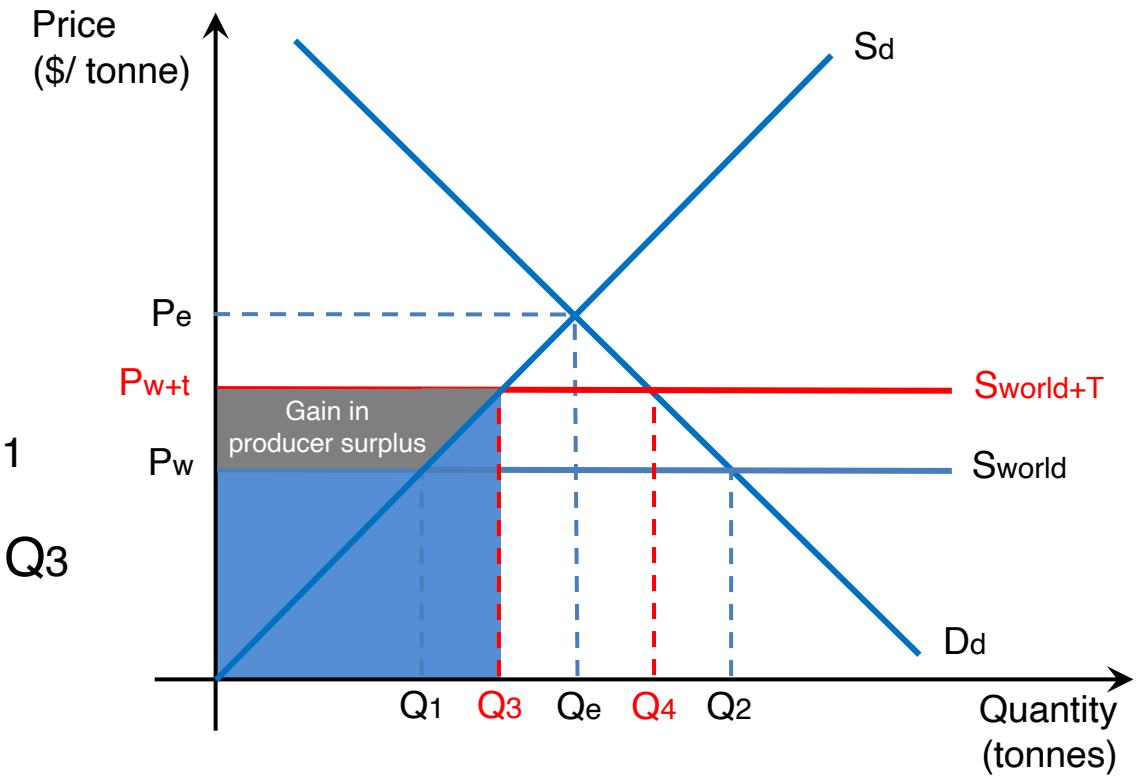
Domestic producers

Domestic producer revenue

Domestic producer revenue = Price × Quantity

Domestic producer revenue before tariff = $P_w \times Q_1$

Domestic producer revenue after tariff = $(P_{w+T}) \times Q_3$

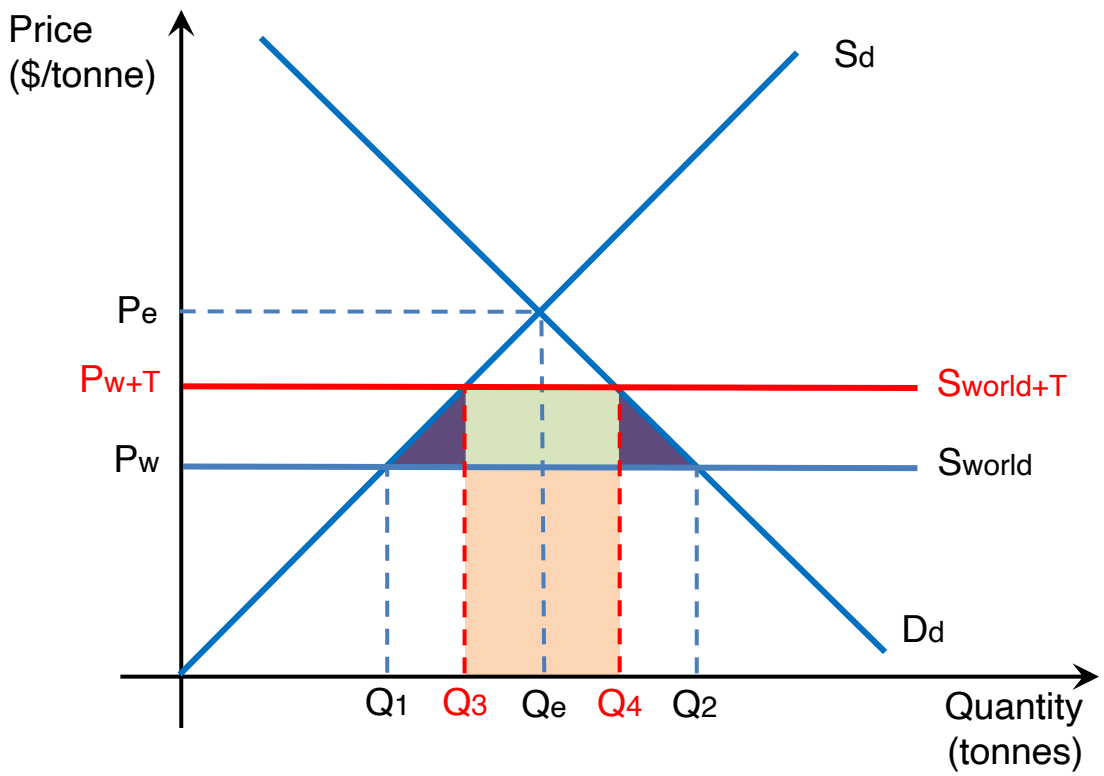


Producer surplus

$$\text{Producer surplus before tariff} = \frac{(P_w - \text{minimum price to sell}) \times Q_1}{2}$$

$$\text{Producer surplus after tariff} = \frac{((P_{w+T}) - \text{minimum price to sell})) \times Q_3}{2}$$

Tariffs – calculating effects on stakeholders (HL only)



Foreign producers

Foreign producer revenue = $P_w \times$ Quantity of imports

Foreign producer revenue before tariff = $P_w \times (Q_2 – Q_1)$

Foreign producer revenue after tariff = $P_w \times (Q_4 – Q_3)$

The government

Government revenue = Tariff × Quantity of imports

Government revenue = $T \times (Q_4 – Q_3)$

Total welfare

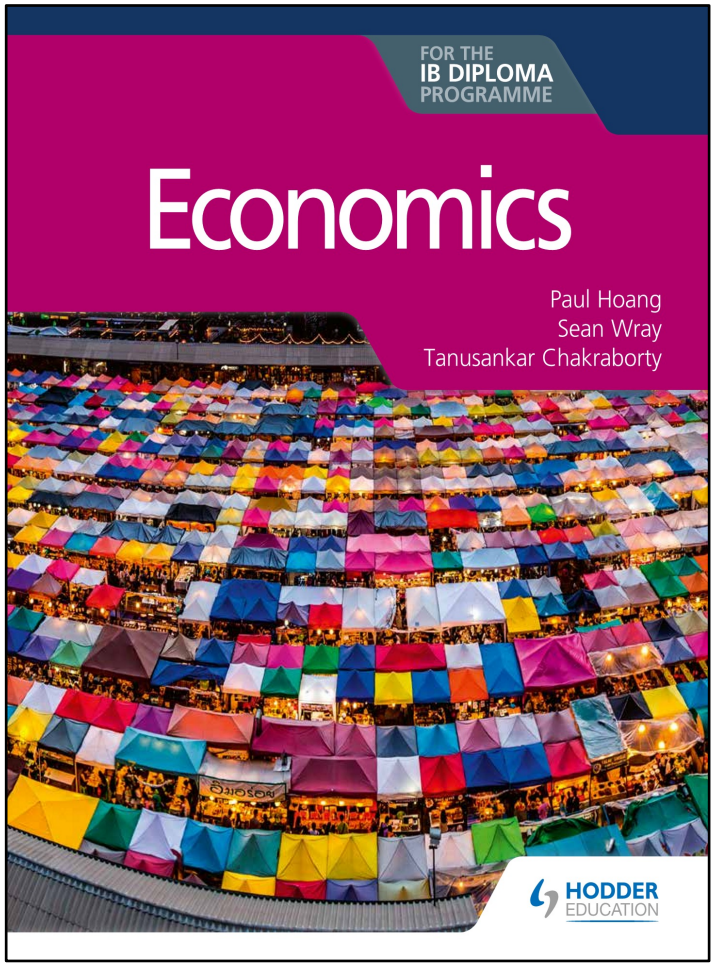
$$\text{Welfare loss} = \frac{(T \times (Q_3 – Q_1))}{2} + \frac{(T \times (Q_2 – Q_4))}{2}$$

Over to you…

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

- Page 444
- Paper 3 Exam Practice Question 28.3
- [2 marks] each

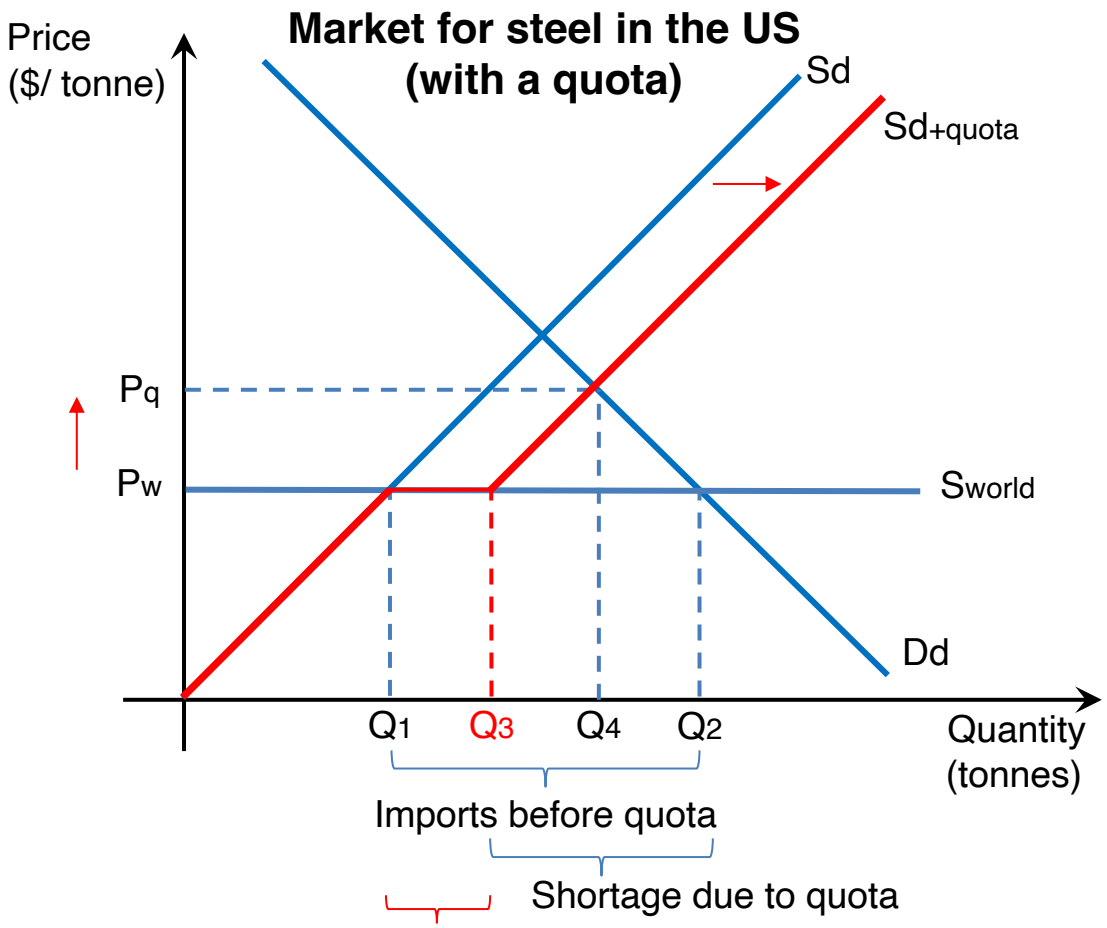


Quotas

An **import quota** is a legal limit on the quantity or value of imports allowed into a country over a time period. Real-world example: Indonesia to slash Aussie beef imports.

Quotas

Suppose the US government imposes a quota of X tonnes of steel per year.



- Imports fall from (Q2–Q1) to Quota X = (Q3–Q1)
- A new supply curve consisting of domestic and foreign producers is formed, Sd+quota
- A shortage of Q2–Q3 arises at Pw
- The shortage exerts upward price pressure on the market, and price increases from Pw → Pq
- Qd falls from Q2 → Q4
- Domestic Qs rises from Q1 → Q1 + (Q4–Q3).

Quotas – effects on stakeholders

Domestic producers are better off as they sell a higher quantity and at a higher price.

Consumers are worse off as they pay a higher price and consume a lower quantity.

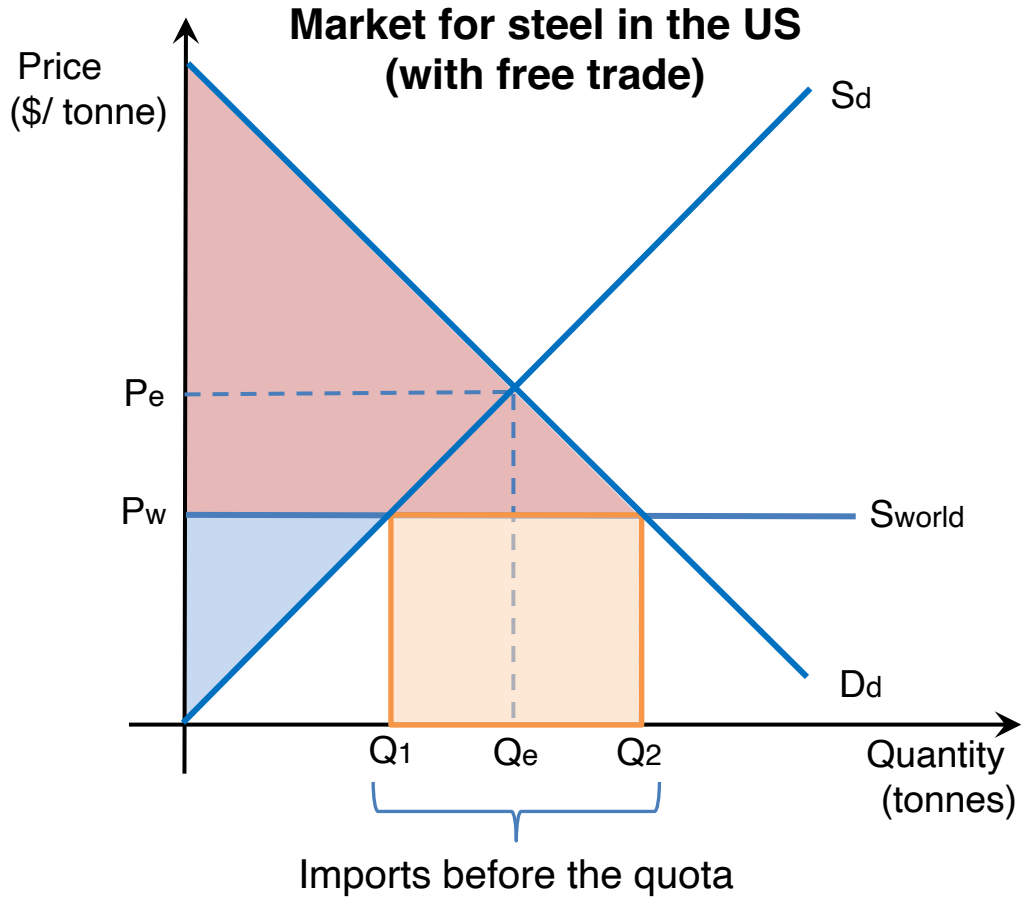
Foreign producers may generate higher or lower sales revenues depending on the PED, PES, and the size of the quota.

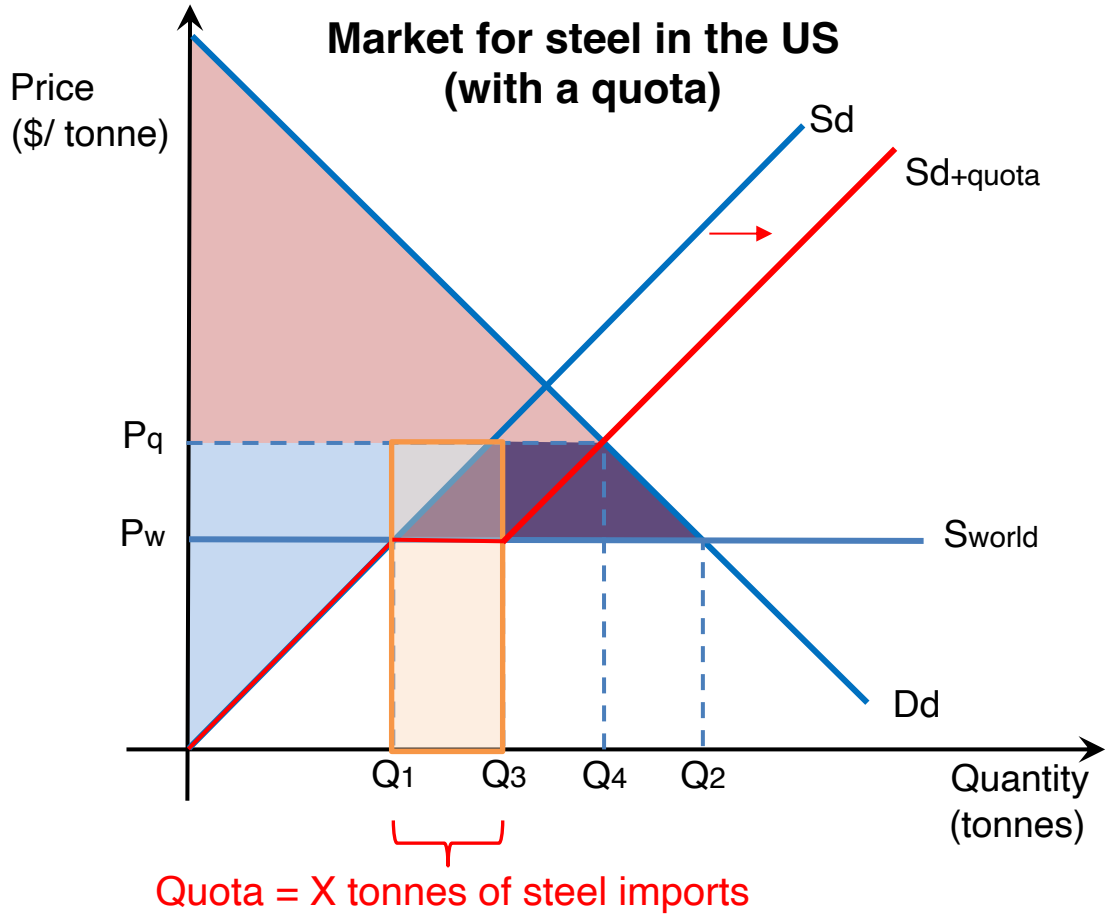
The government does not earn any revenue.

Total welfare decreases. More units of products are being produced by the relatively inefficient producers, and consumers must pay a higher price while consuming a lower quantity.

Why might the government impose tariffs instead of quotas, or vice versa?

Quotas – effects on stakeholders





Consumer surplus

Producer surplus

Foreign producer revenue

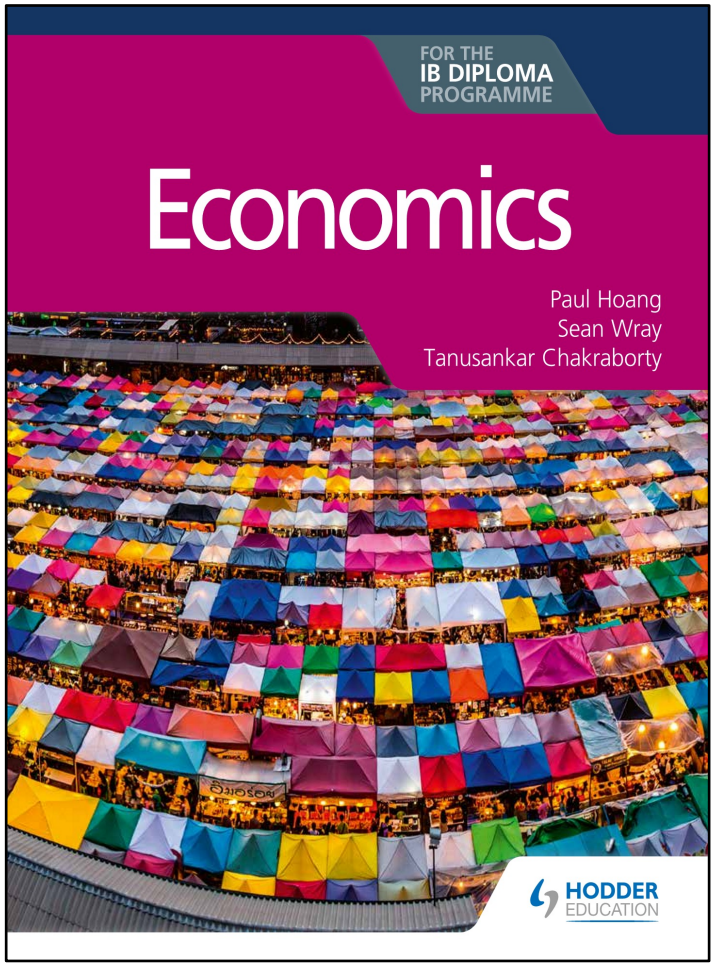
Welfare loss

Over to you…

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

- Page 446
- Paper 1 Exam Practice Question 28.4
- [10 marks]



Quotas – calculating effects on stakeholders (HL only)

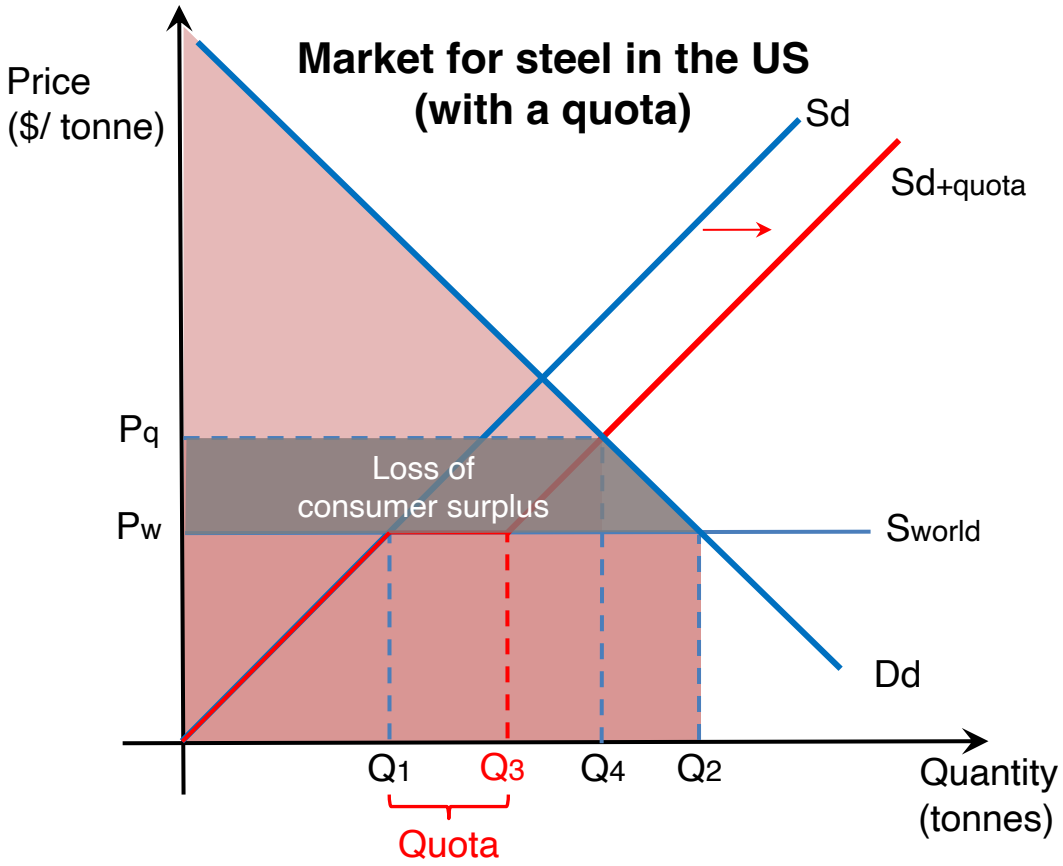
Consumers

Consumer expenditure

Consumer expenditure = Price × Quantity

Consumer expenditure before quota = $P_w \times Q_2$

Consumer expenditure after quota = $P_q \times Q_4$



Consumer surplus

$$\text{Consumer surplus before quota} = \frac{(\text{Maximum price consumers are willing to pay} - P_w) \times Q_2}{2}$$

$$\text{Consumer surplus after quota} = \frac{(\text{Maximum price consumers are willing to pay} - P_q) \times Q_4}{2}$$

Quotas – calculating effects on stakeholders (HL only)

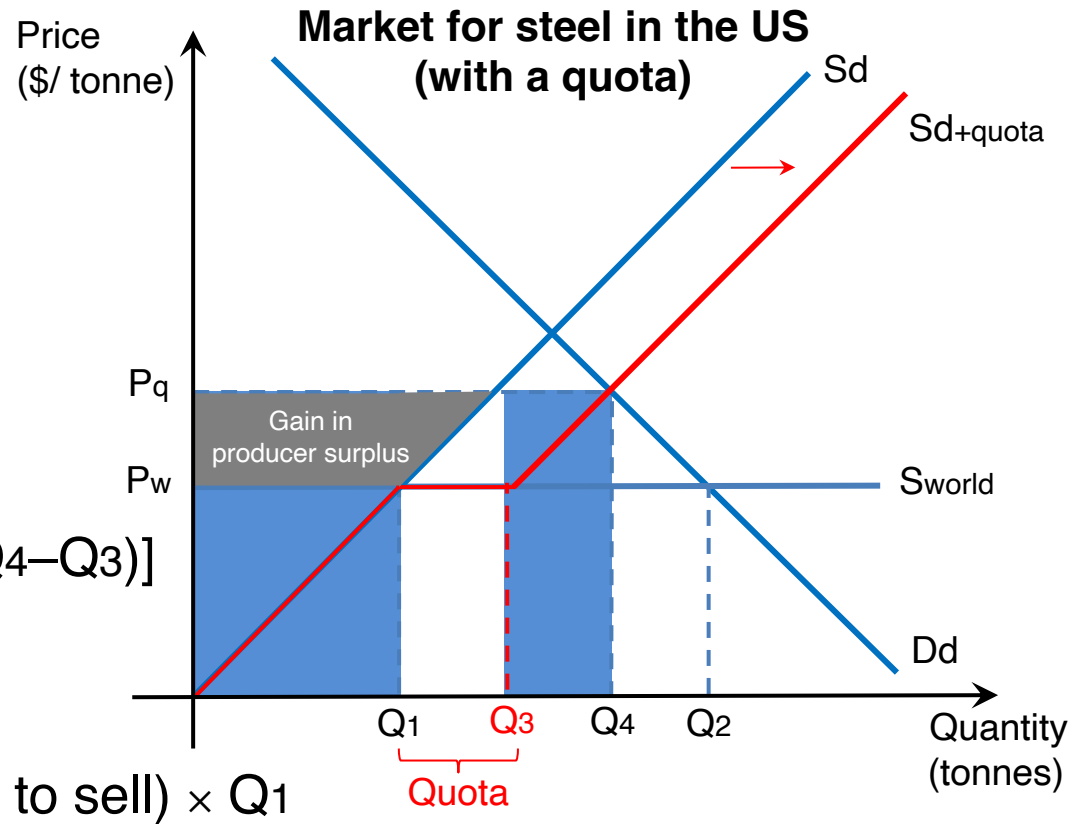
Domestic producers

Domestic producer revenue

Domestic producer revenue = Price × Quantity

Domestic producer revenue before quota = $P_w \times Q_1$

Domestic producer revenue after quota = $P_q \times [Q_1+(Q_4-Q_3)]$

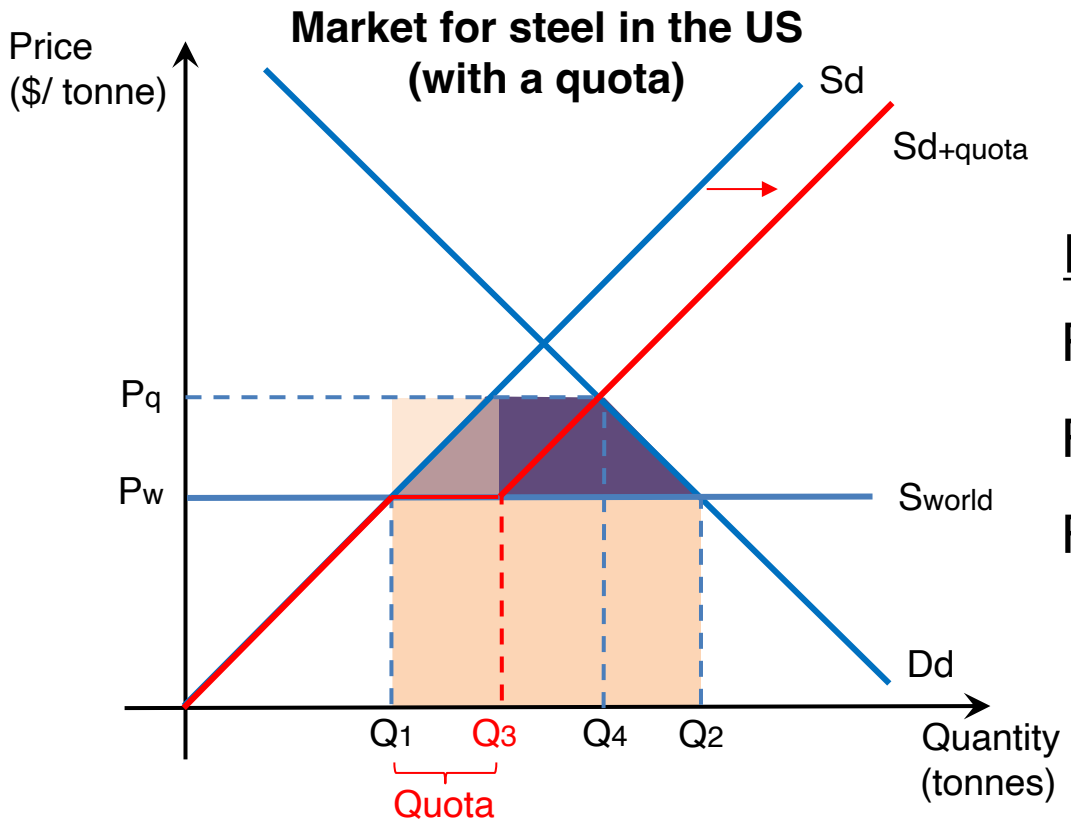


Producer surplus

$$\text{Producer surplus before quota} = \frac{(P_w - \text{minimum price to sell}) \times Q_1}{2}$$

$$\text{Producer surplus after quota} = \frac{(P_q - \text{minimum price to sell}) \times Q_3}{2}$$

Quotas – calculating effects on stakeholders (HL only)



Foreign producers

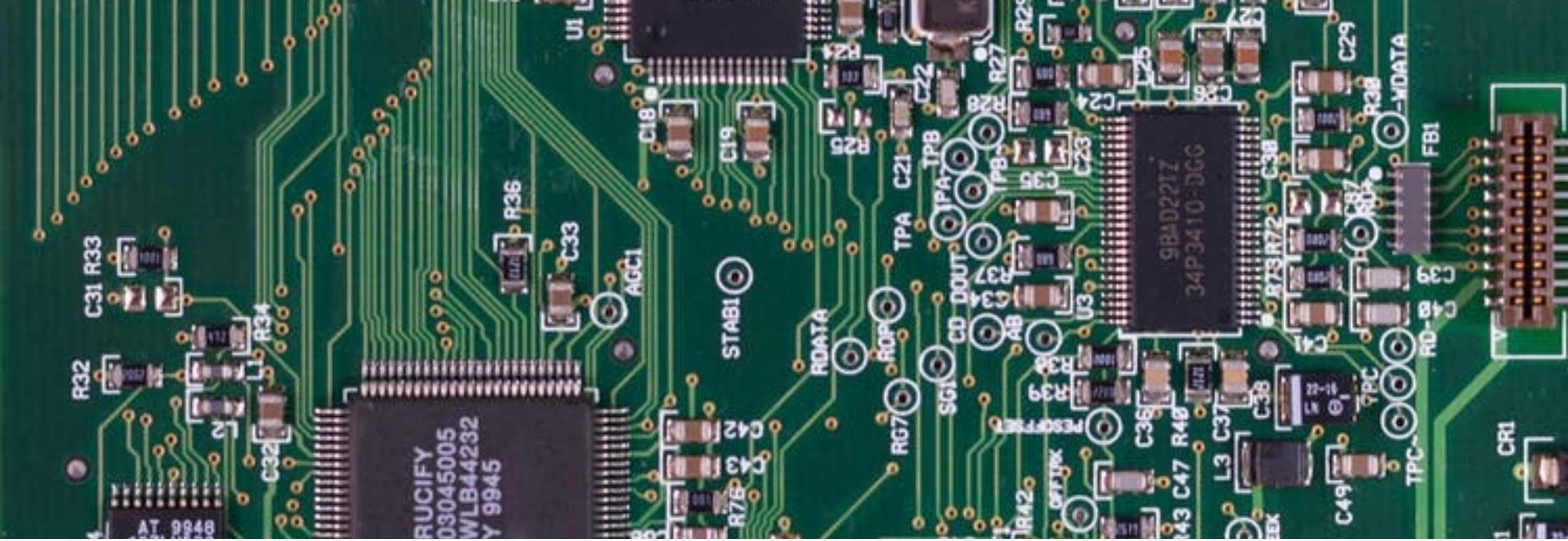
Foreign producer revenue = $P_w \times$ Quantity of imports

Foreign producer revenue before quota = $P_w \times (Q_2 - Q_1)$

Foreign producer revenue after quota = $P_q \times (Q_3 - Q_1)$

Total welfare

$$\text{Welfare loss due to quota} = \frac{[(P_q - P_w) \times (Q_3 - Q_1)]}{2} + \frac{[(P_q - P_w) \times (Q_4 - Q_3)]}{2} + [(P_q - P_w) \times (Q_4 - Q_3)]$$

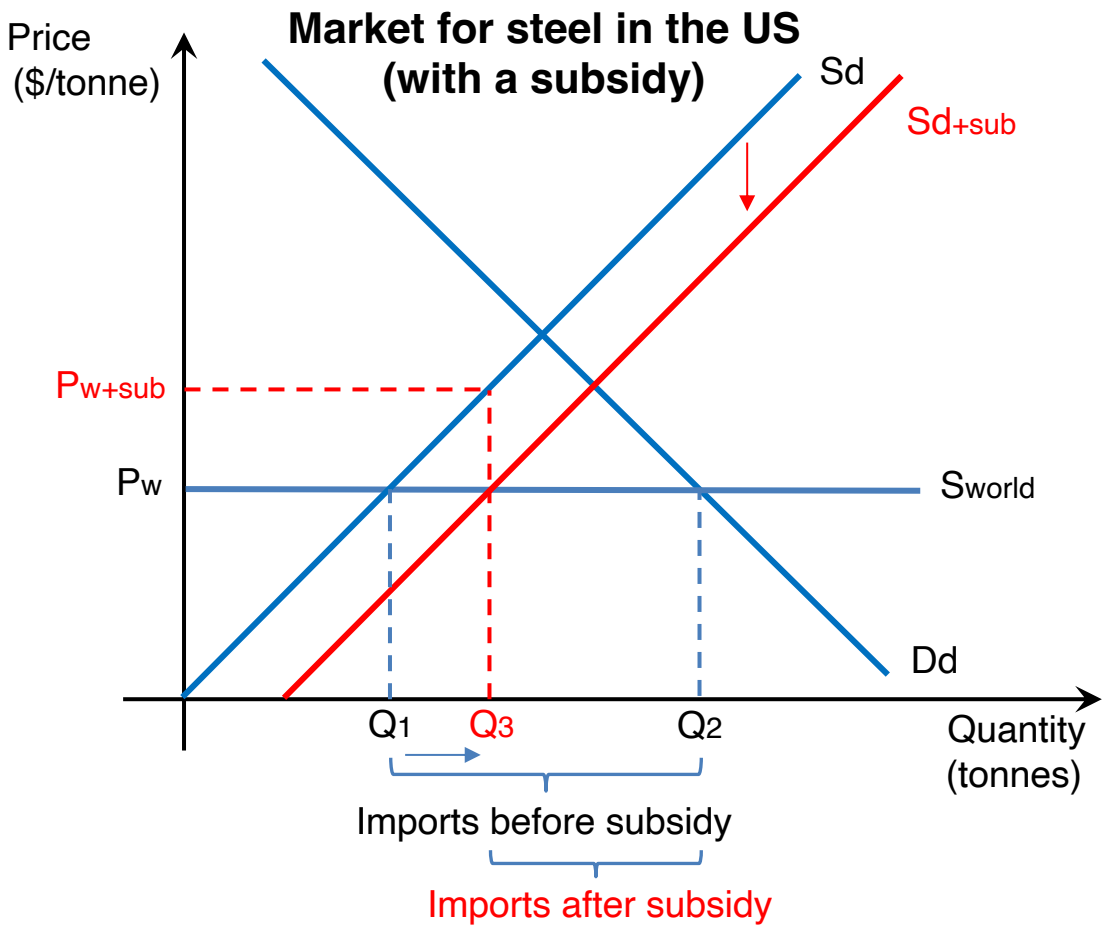


Production subsidies

A **production subsidy** refers to a sum of money which the government provides to domestic producers for producing each unit of the subsidized good. Real-world example: [Subsidies for computer-chip manufacturing](#).

Production subsidies

Suppose the US government provides a subsidy of *sub* per tonne of steel produced.



- Supply shifts out from S_d → S_{d+sub}.
- Quantity supplied from domestic producers increase to from Q_1 to Q_3.
- Domestic producers sell at P_w to consumers but receive P_{w+sub}.
- Imports fall from $Q_2–Q_1$ → $Q_2–Q_3$.

Production subsidies – effects on stakeholders

Domestic producers are better off as they sell a higher quantity (Q_3) and receive a higher price (P_{w+sub}).

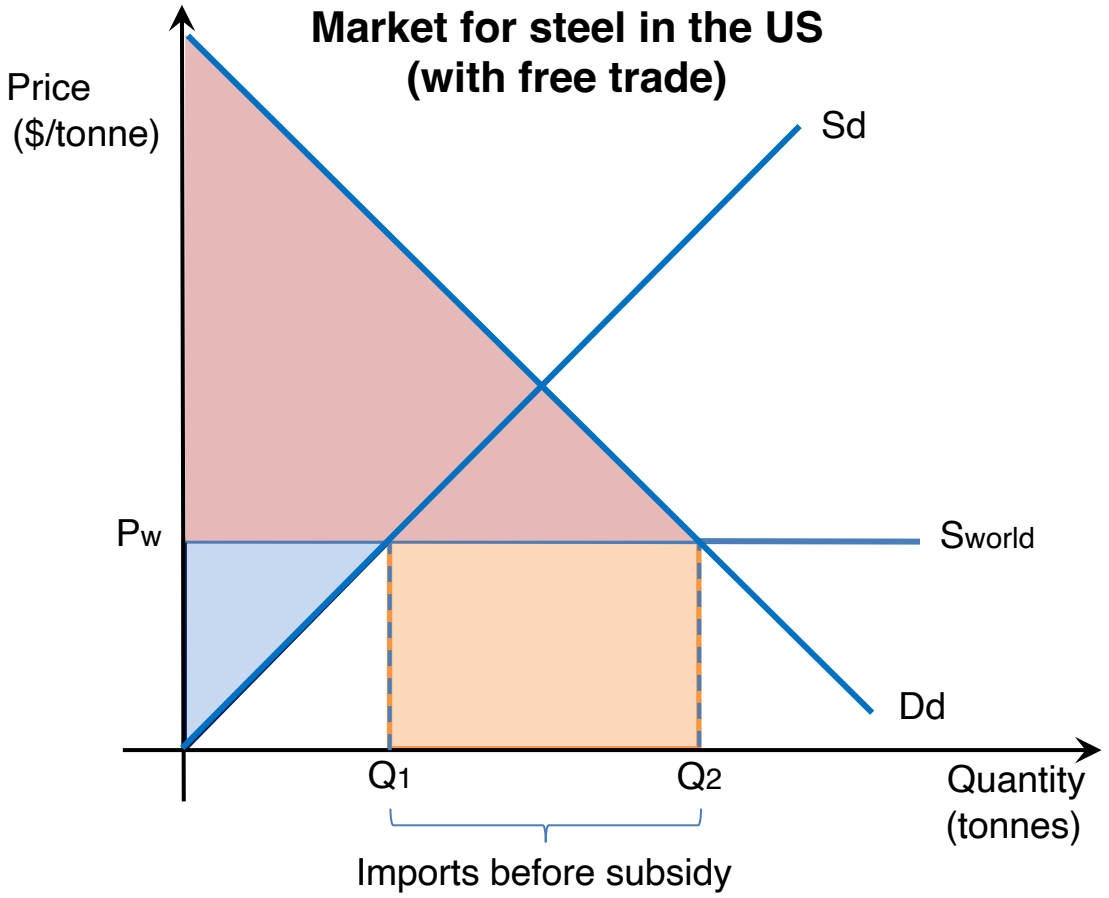
Consumers are unaffected by the subsidy as they still pay P_w and consume Q_2 units.

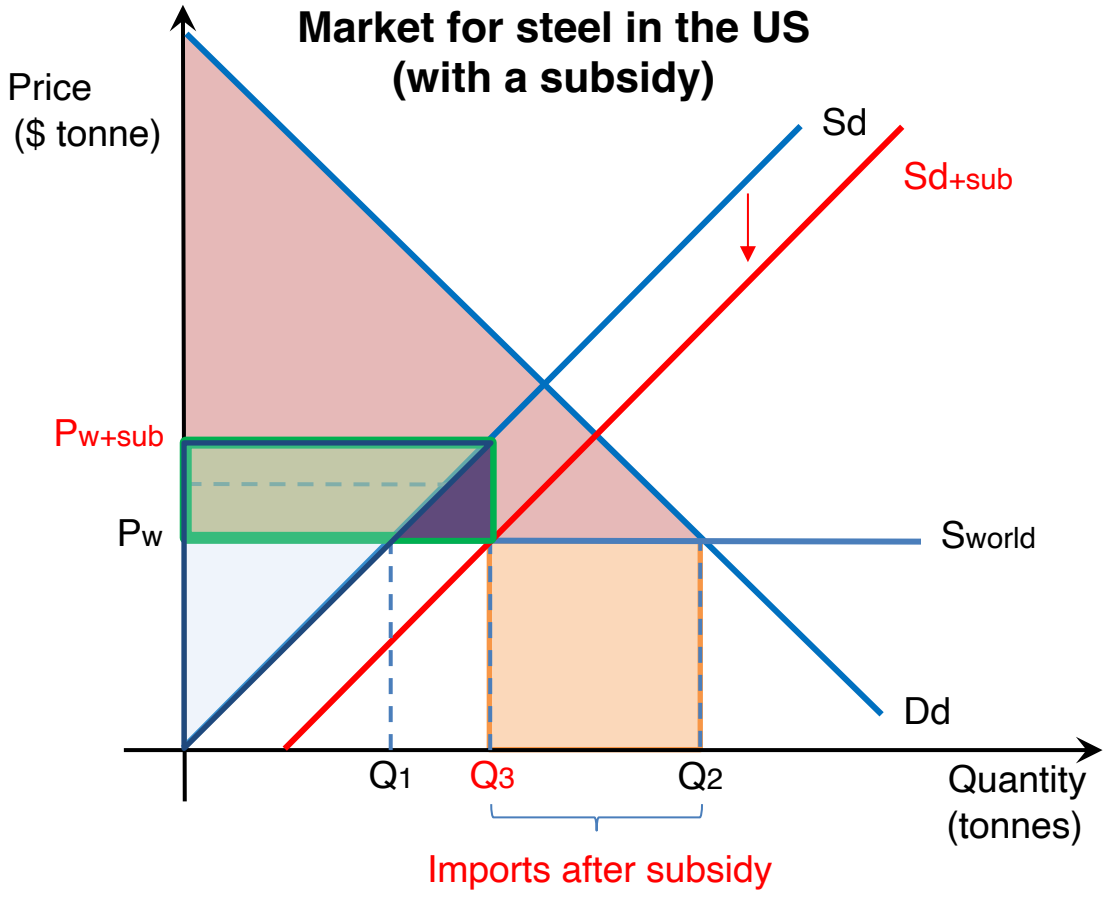
Foreign producers generate lower sales revenues due to falling exports (Q_2–Q_3).

The government/taxpayers must pay for the subsidy (($P_{w+sub} – P_w$) × Q_3).

Total welfare decreases. More units are being produced by the relatively inefficient producers, leading to a misallocation of resources.

Production subsidies – effects on stakeholders





Consumer surplus

Producer surplus

Foreign producer revenue

Cost to government

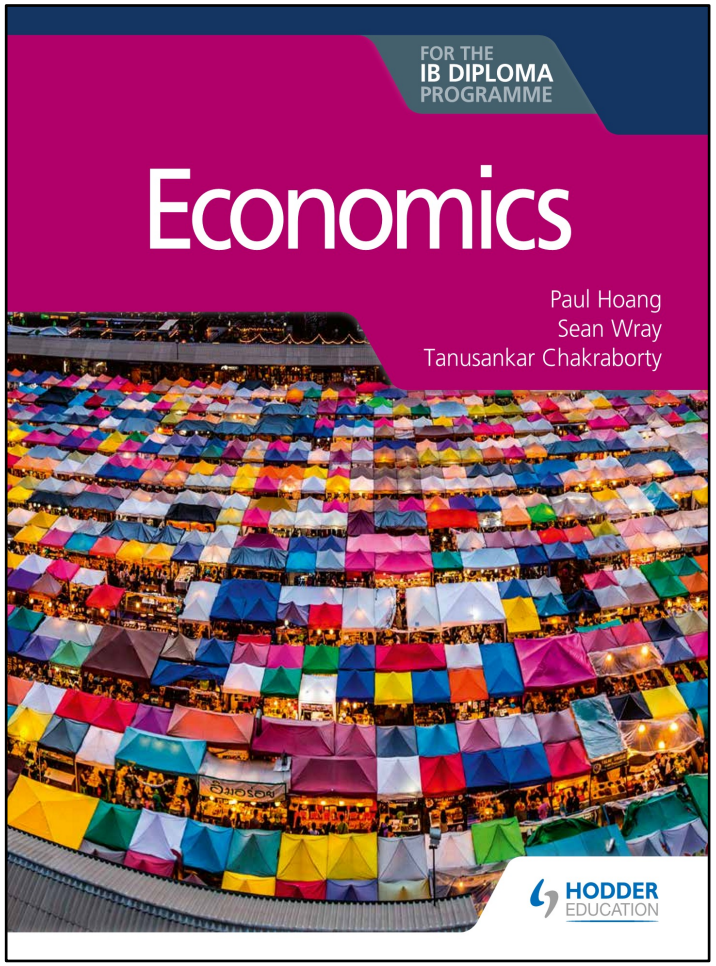
Welfare loss

Over to you…

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

- Page 450
- Paper 1 Exam Practice Question 28.5
- [10 marks]



Production subsidies – calculating effects on stakeholders (HL only)

Consumers

Consumer expenditure

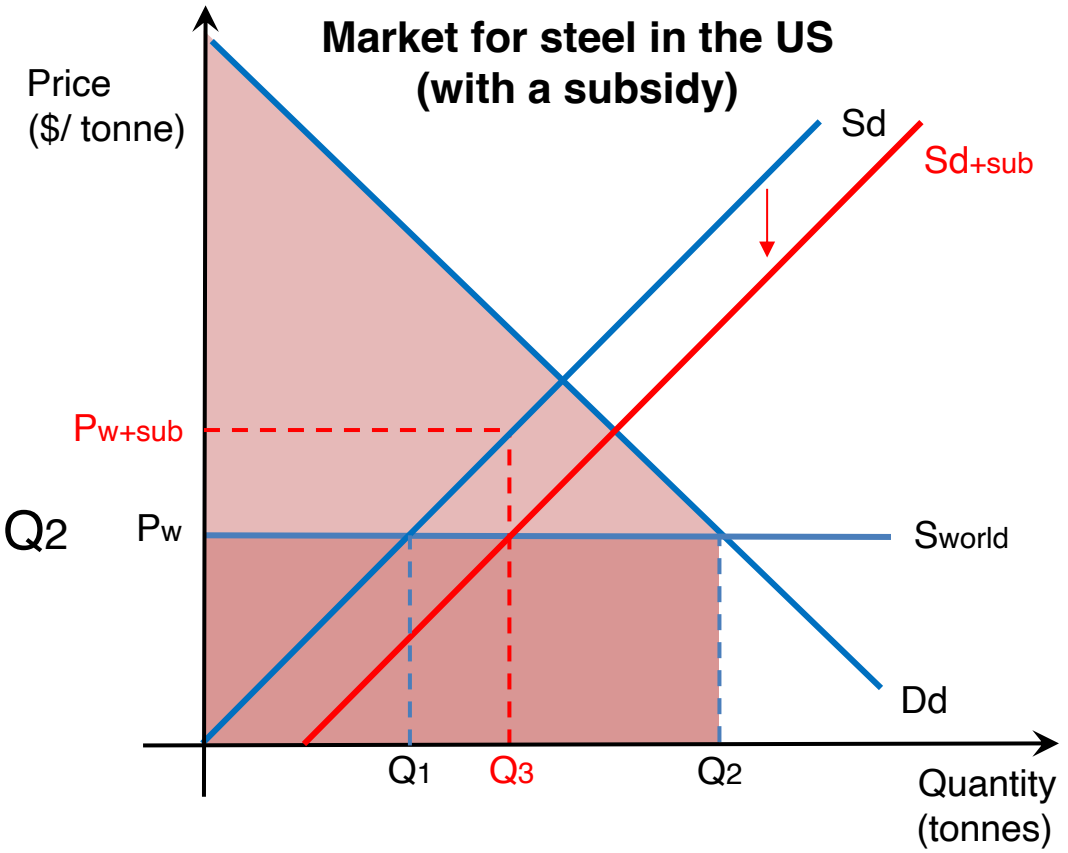
Consumer expenditure = Price × Quantity

Consumer expenditure before & after subsidy = $P_w \times Q_2$

Consumer surplus

Consumer surplus before and after subsidy

$$= \frac{(\text{Maximum price consumers are willing to pay} - P_w) \times Q_2}{2}$$



Production subsidies – calculating effects on stakeholders (HL only)

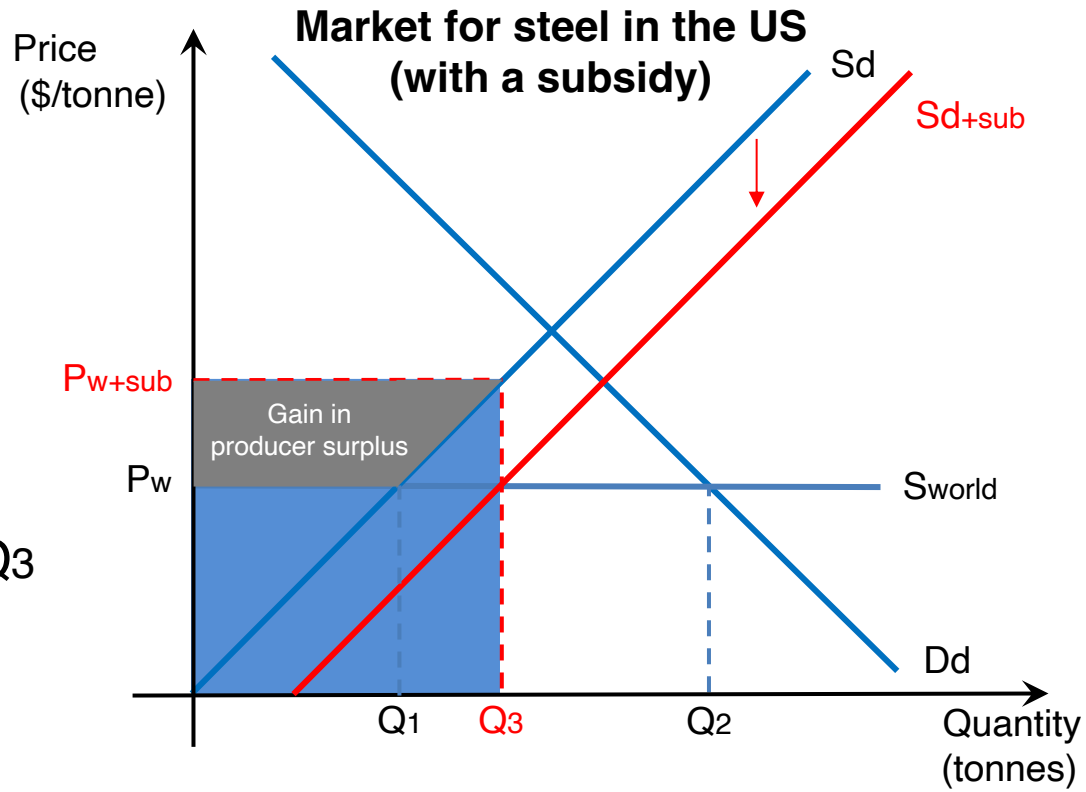
Domestic producers

Domestic producer revenue

Domestic producer revenue = Price × Quantity

Domestic producer revenue before subsidy = $P_w \times Q_1$

Domestic producer revenue after subsidy = $P_{w+sub} \times Q_3$

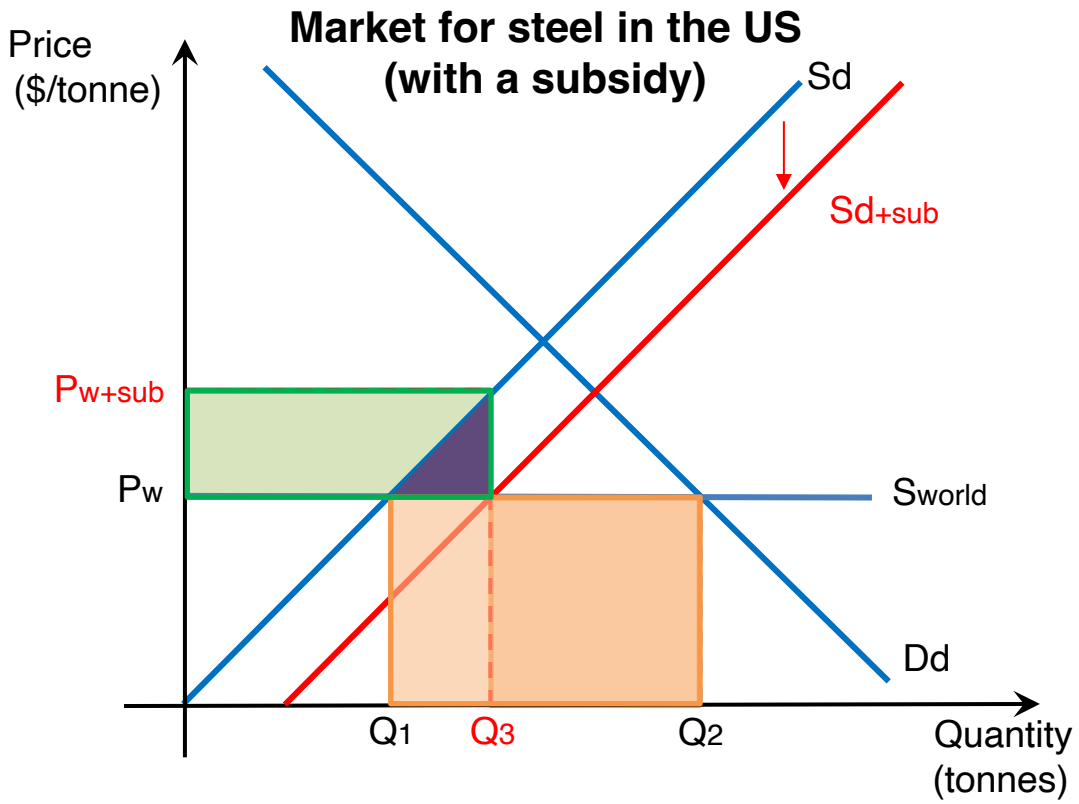


Producer surplus

$$\text{Producer surplus before subsidy} = \frac{(P_w - \text{minimum price to sell}) \times Q_1}{2}$$

$$\text{Producer surplus after subsidy} = \frac{(P_{w+sub} - \text{minimum price to sell}) \times Q_3}{2}$$

Production subsidies – calculating effects on stakeholders (HL only)



Foreign producers

Foreign producer revenue = $P_w \times$ Quantity of imports

Foreign producer revenue before subsidy

$= P_w \times (Q_2 – Q_1)$

Foreign producer revenue after subsidy

$= P_w \times (Q_2 – Q_3)$

The government

Government expenditure = $(P_{w+sub} – P_w) \times Q_3$

Total welfare

Welfare loss due to subsidy

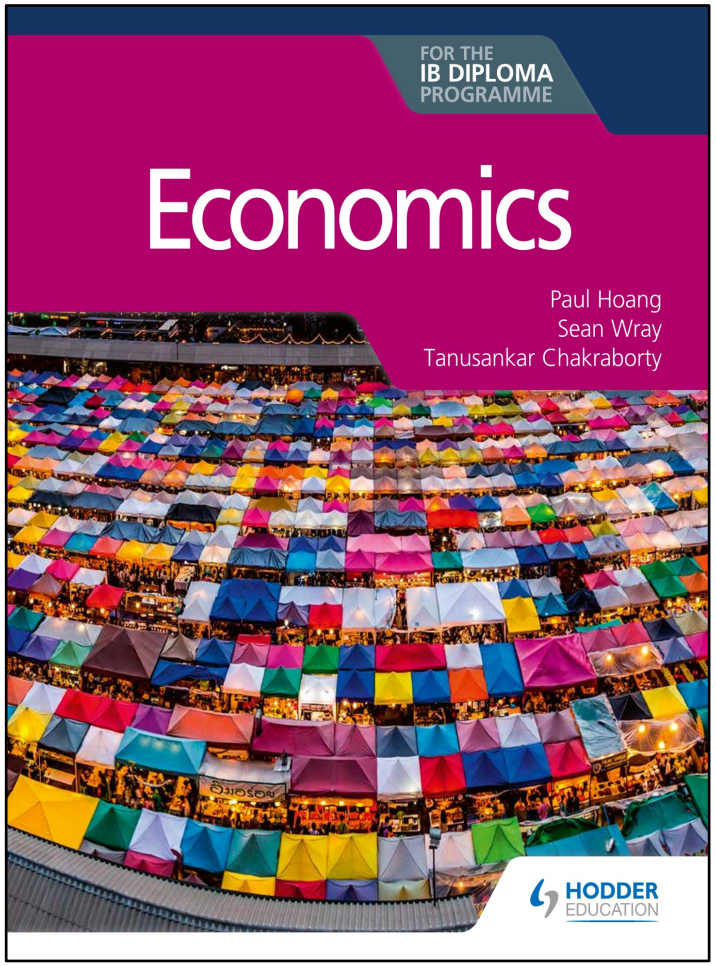
$$= \frac{(P_{w+sub} – P_w) \times (Q_3 – Q_1)}{2}$$

Over to you…

Hoang, Wray, & Chakraborty (2020)

Economics for the IB Diploma Programme

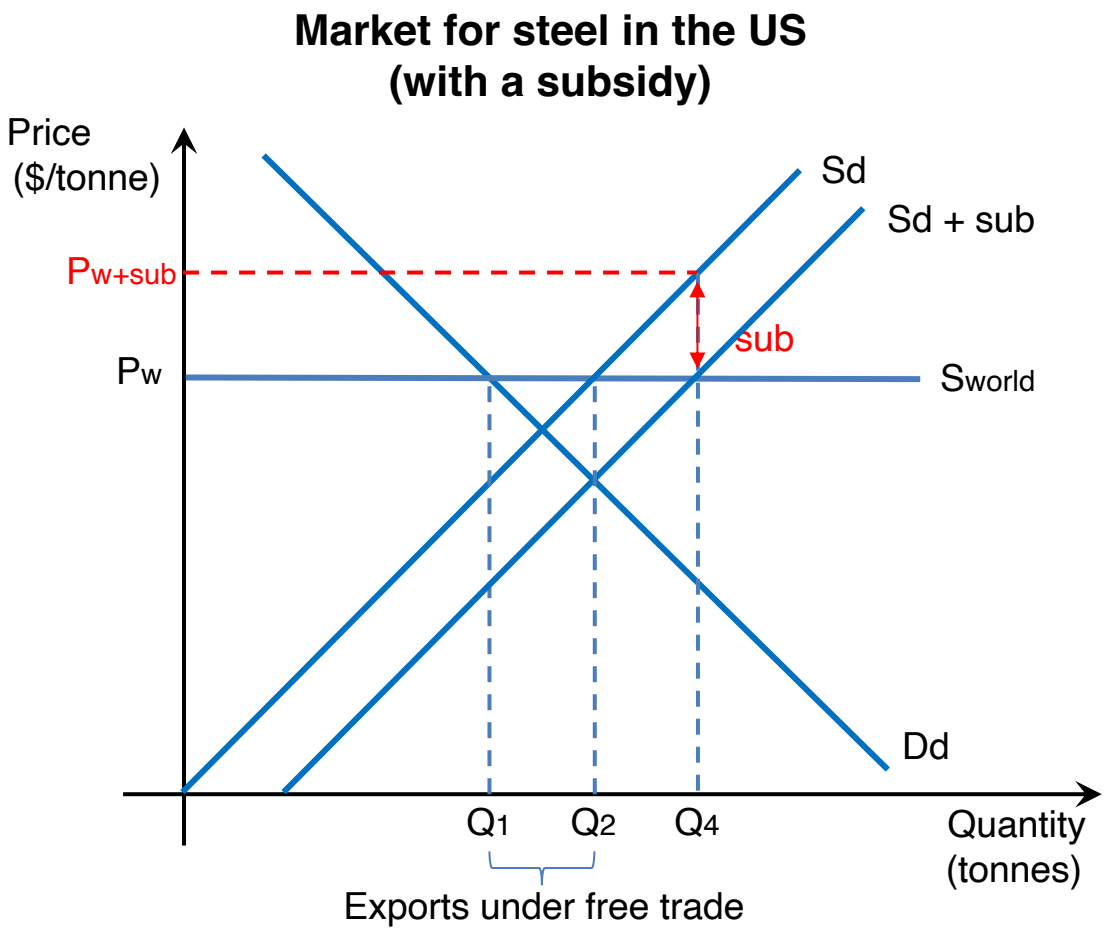
- Page 452
- Paper 3 Exam Practice Question 28.6
- [2 marks] each



Export subsidies

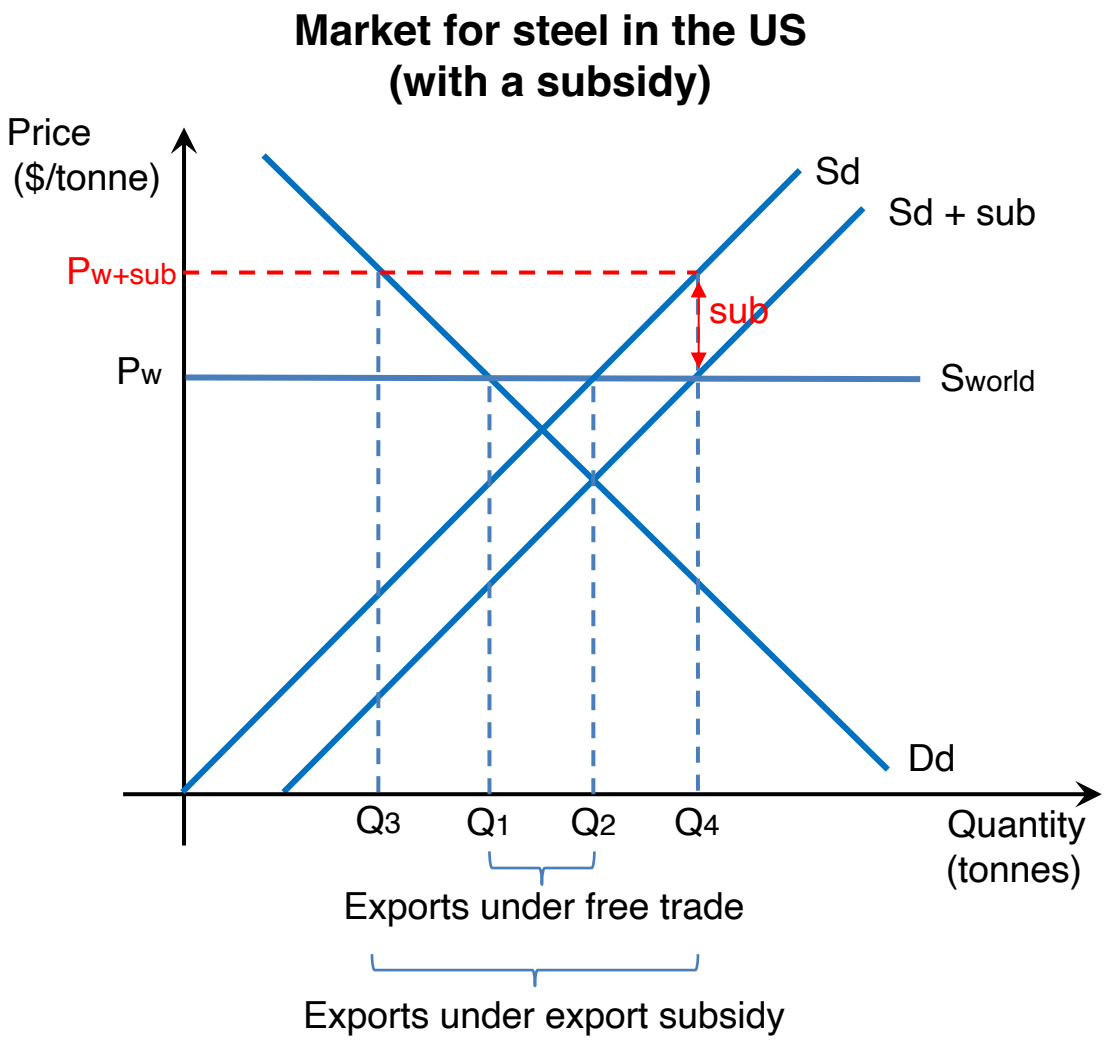
An **export subsidy** refers to a sum of money which the government provides to domestic producers for each unit of the subsidized good exported. Real-world example: India approves subsidy to export 6 million tonnes of sugar.

Export subsidies



- At Pw, domestic producers export Q2-Q1.
- Suppose the US government provides a subsidy per tonne of steel exported.
- Domestic supply shifts outwards to Sd+sub
- Domestic producers now receive Pw+sub per tonne of steel and supply Q4.

Export subsidies



- Since domestic producers receive Pw+sub for selling to foreign buyers, there is no incentive to sell to domestic consumers at Pw.
- Thus, domestic buyers must also pay Pw+sub to acquire steel.
- At Pw+sub, domestic consumers reduce quantity demanded to Q3.
- Exports subsequently increase to Q4-Q3.

Export subsidies – effects on stakeholders

Domestic producers are better off as they sell a higher quantity (Q_4) and receive a higher price (P_{w+sub}).

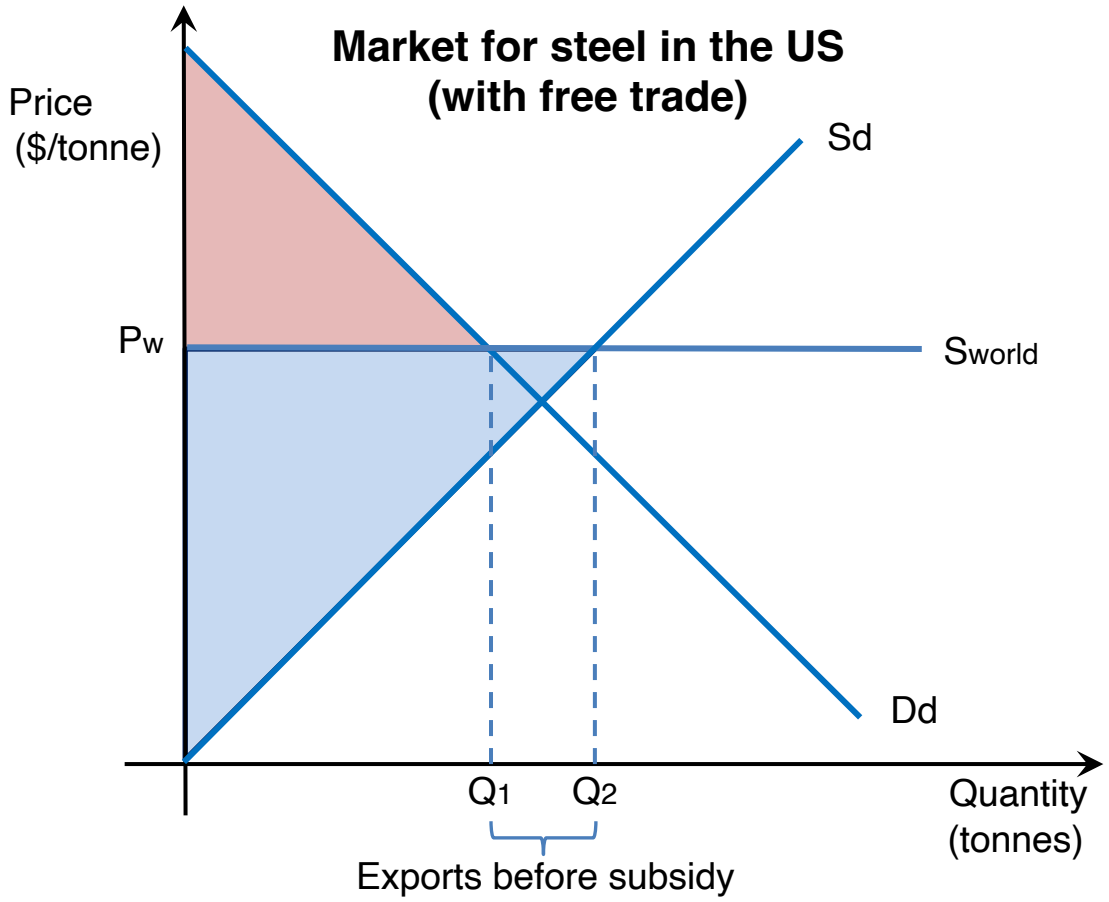
Consumers are worse off as they pay a higher price (P_{w+sub}) and consume a lower quantity (Q_3).

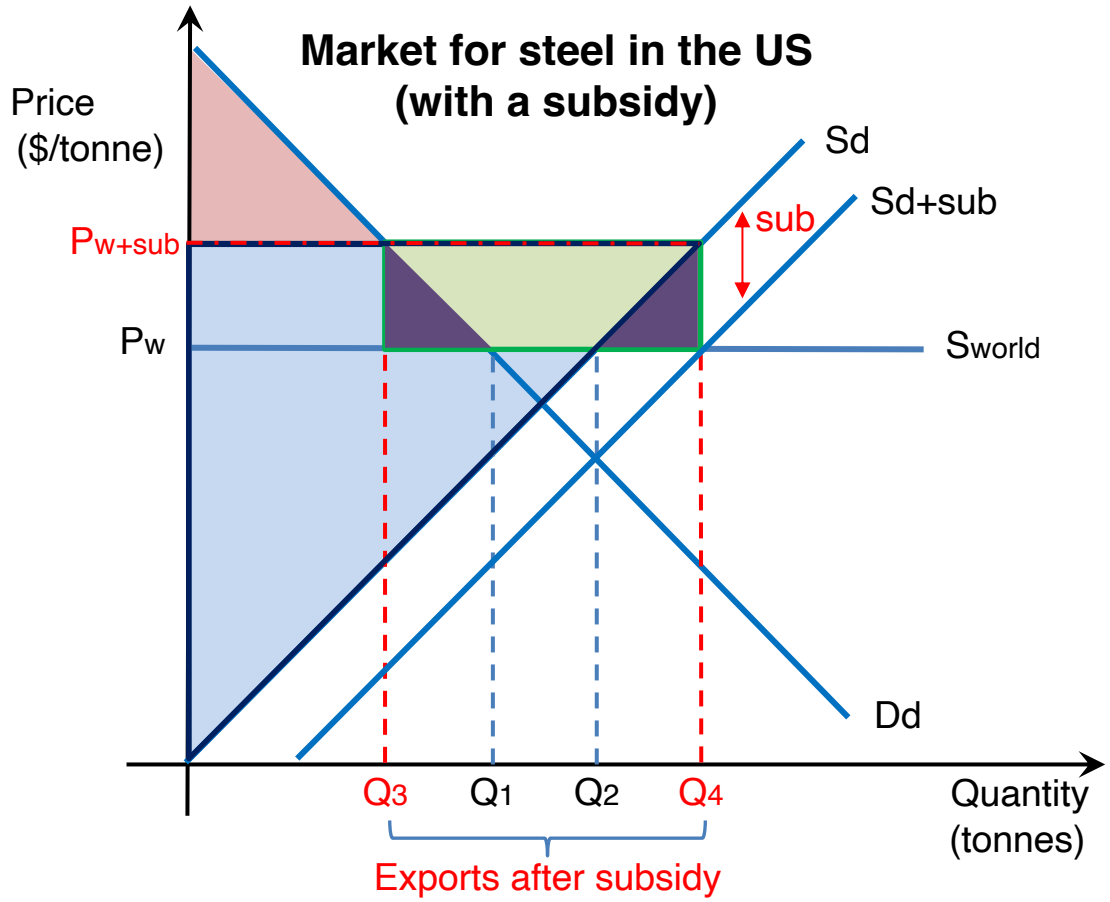
Foreign producers i.e. other exporting countries lose a portion of the market and are worse off.

The government/ taxpayers must pay [sub x (Q_4–Q_3)] for the subsidy.

Total welfare decreases. More units of products are being produced by the relatively inefficient producers, leading to a misallocation of resources.

Export subsidies – effects on stakeholders





Consumer surplus

Producer surplus

Cost to the government

Welfare loss

Export subsidies – calculating effects on stakeholders (HL only)

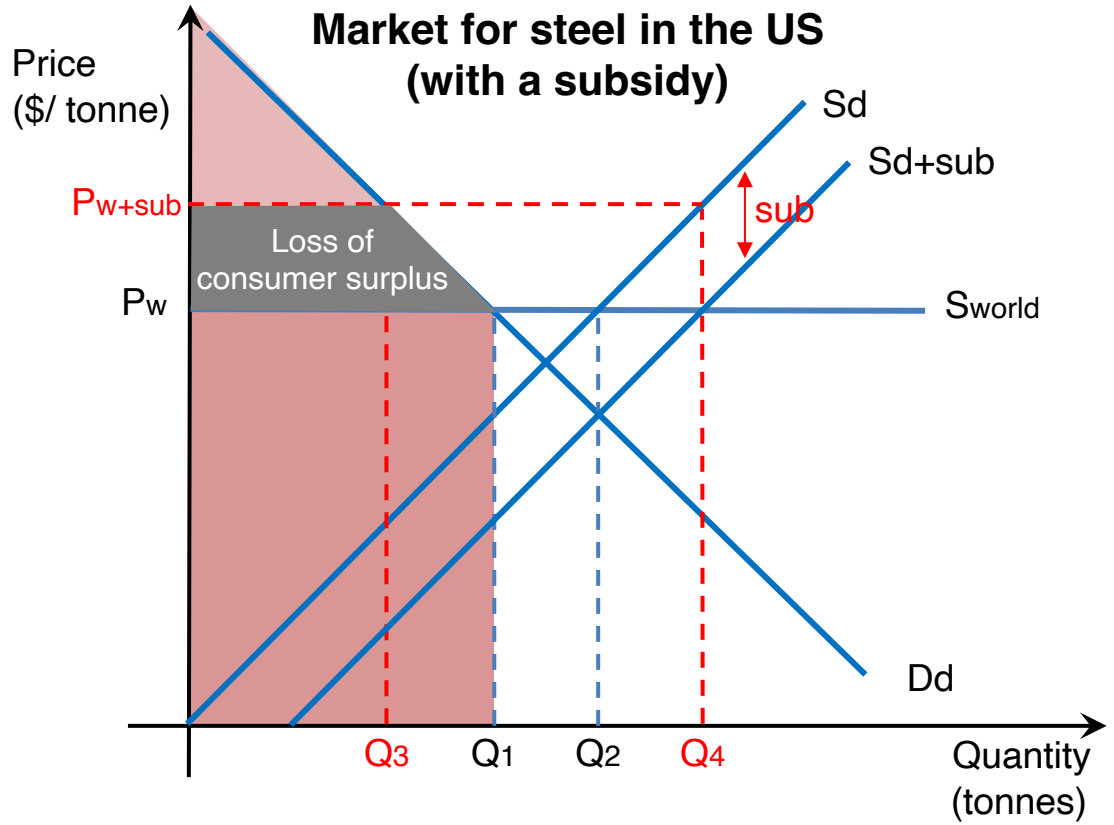
Consumers

Consumer expenditure

Consumer expenditure = Price × Quantity

Consumer expenditure before subsidy = $P_w \times Q_1$

Consumer expenditure after subsidy = $P_{w+sub} \times Q_3$



Consumer surplus

$$\text{Consumer surplus before subsidy} = \frac{(\text{Maximum price consumers are willing to pay} - P_w) \times Q_1}{2}$$

$$\text{Consumer surplus after subsidy} = \frac{(\text{Maximum price consumers are willing to pay} - (P_{w+sub})) \times Q_3}{2}$$

Export subsidies – calculating effects on stakeholders (HL only)

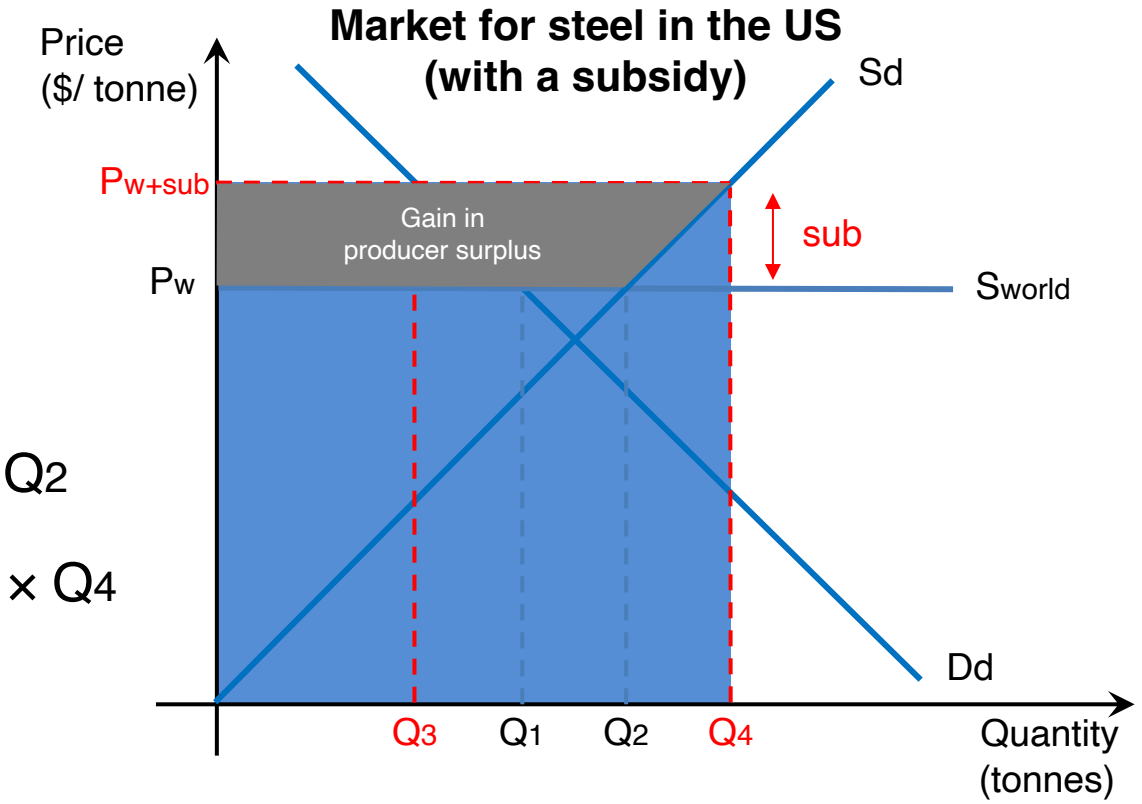
Domestic producers

Domestic producer revenue

Domestic producer revenue = Price × Quantity

Domestic producer revenue before subsidy = $P_w \times Q_2$

Domestic producer revenue after subsidy = $P_{w+sub} \times Q_4$

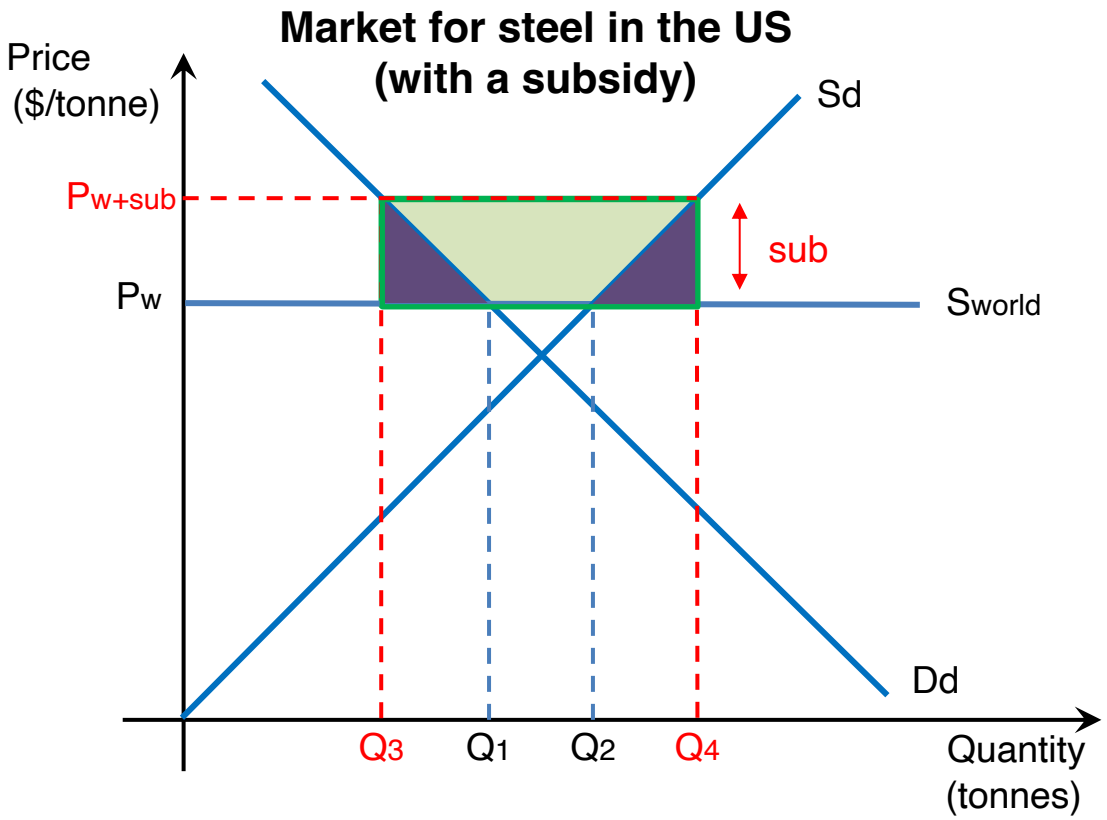


Producer surplus

$$\text{Producer surplus before subsidy} = \frac{(P_w - \text{minimum price to sell}) \times Q_2}{2}$$

$$\text{Producer surplus after subsidy} = \frac{(P_{w+sub} - \text{minimum price to sell}) \times Q_4}{2}$$

Export subsidies – calculating effects on stakeholders (HL only)



The government

Government expenditure = sub × (Q4–Q3)

Total welfare

Welfare loss due to subsidy

$$= \frac{\text{sub} \times (Q3–Q1)}{2} + \frac{\text{sub} \times (Q4–Q2)}{2}$$

Administrative barriers

Administrative barriers are bureaucratic regulations which increases the cost, difficulty, and time required to import foreign goods and services. Some examples of administrative barrier include embargoes, licensing requirements, and product quality standards.

Real world example – case study

Article: Red tape restricts imports from China

1. Why did Turkey impose tariffs on imports from China?

2. Why did Turkey use administrative barriers in addition to tariffs? Were the tariffs imposed on Chinese imports effective?

3. What administrative barriers did Turkey's government impose on Chinese imports? How did this affect domestic producers?

Over to you…

Hoang, Wray, & Chakraborty (2020)

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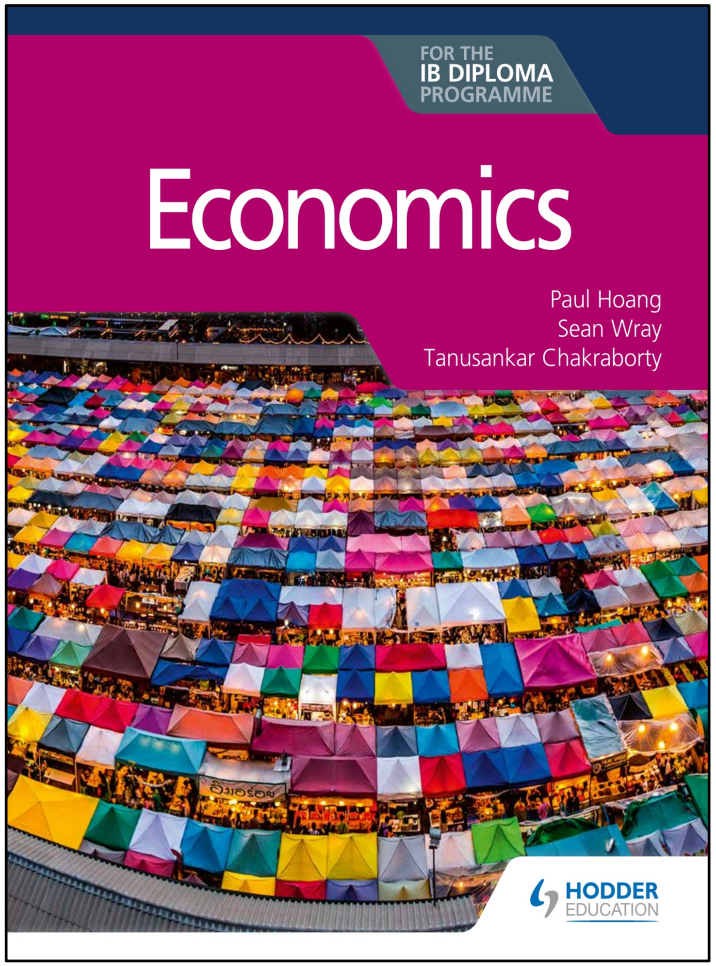
- [15 marks]



Test your knowledge on this unit: Kahoot!