

International trade

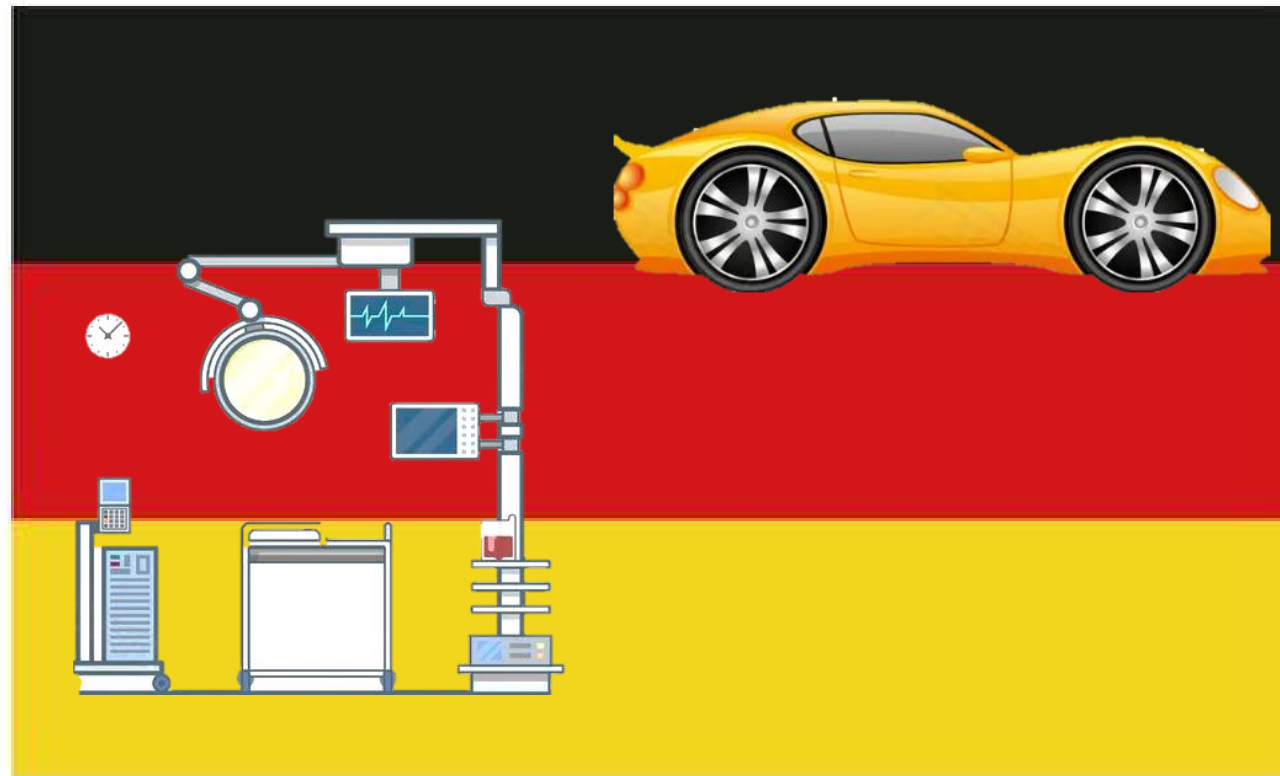




Why countries trade with each other?

Factor endowments

- Different countries have differences in quantities and quality of factors of production, as well as levels of technology, which together are called '**factor endowment**'
- Countries well endowed with natural resources tend to have a cost advantage in the production of products using these resources.



Germany



Saudi Arabia



Thailand



Australia



Argentina

Free trade



- Different countries have different factor endowments. **International trade** is the exchange of goods and services across national states. It involves the sale of **exports** and **imports**.
- **Free trade** refers to the absence of government intervention of any kind in international trade, so that trade takes place without any restrictions (barriers) between individuals, firms or governments of different countries.
- The prices of goods that are traded internationally (imported and exported) are determined entirely by the **forces of demand and supply**.

Benefits of international trade



1 Increased competition

- Import → Domestic firms become exposed to competition from products produced by firms in foreign countries.
- Exports → products are forced to compete with other products produced in other countries.
- Firms are forced to be more efficient and innovative → offer more competitive prices and/or adding superior features to their goods and services.

2 Greater efficiency in production

- Increased competition → Firms are forced to become more efficient, try to produce at the lowest possible cost.
- If not, higher cost leads to higher price. domestic consumers will prefer the lower-priced imported products, while foreign consumers will prefer lower-priced goods produced in other countries.

3 More efficient allocation of resources

- More efficient allocation of resources both within countries as well as globally.
- Lower costs or fewer resources → Less waste of scarce resources → more efficient resource allocation

Benefits of international trade



4 Acquiring needed resources

- Countries can get a variety of natural resources or capital goods that are not available domestically but are needed for their domestic production.
- E.g.: oil, timber, minerals, semi-finished products, machinery and equipment, etc.

5 Access to larger markets

- Having greater access to larger markets around the world enables countries to reach a larger customer base.
- By increasing the level of production of goods and services, firms are able to achieve greater economies of scale, which leads to higher levels of profit and the creation of jobs in the long term.
- It also helps to tackle the problems of poverty.

6 Economies of scale in production

- Access to larger markets allows firms to grow beyond the limits of national boundaries, produce more output and take advantage of economies of scale.
- Lower average cost → lower price → greater export competitiveness → sell more in foreign markets
- The larger scale of operations also helps domestic businesses to take advantage of division of labor and specialization and to invest in specialized capital and machinery, leading to further cuts in average costs of production.

7 Trade makes possible the flow of new ideas and technology

- New ideas, technologies and skills to be transferred from one country to another.

Benefits of international trade



8 Lower prices for consumers

- Increased competition, greater efficiency & Larger economies of scale → lower cost → lower price
- Domestic producers can buy cheaper raw materials and semi-finished goods from foreign suppliers. → lower average costs of production → lower price for consumers

9 Greater choice for consumers

- By trading with each other, countries can import a larger variety of goods and services, possibly of higher quality, than the ones they can produce themselves.

10 Increases in domestic production and consumption as a result of specialization

- Without international trade, a country must itself produce all the goods and services consumed.
- With international trade, the country can use its resources to specialize in the production of those goods and services it can produce more efficiently (with lower cost or fewer resources). It can produce more and trade some of them for other goods produced more efficiently in other countries.
- It can produce a greater quantity of output because it does not 'waste' its scarce resources on producing goods and services at a relatively high cost.
- It can increase its consumption of goods and services, because by exporting part of its larger domestic output in exchange for other output produced more cheaply elsewhere, it can acquire a larger overall quantity of goods and services. → comparative advantage.

Benefits of international trade

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Source of foreign exchange

- Export: country acquire foreign currencies by selling domestic goods and services. (In)
 - Imports: country pay to get the foreign goods and services. (out)
- Acquiring foreign exchange from exports increases their ability to import.



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Trade makes countries interdependent, reducing the possibility of hostilities and violence

- International trade links between countries can form the basis for economic relationships that reduce the possibility of war or other hostilities.

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Trade as an 'engine for growth'

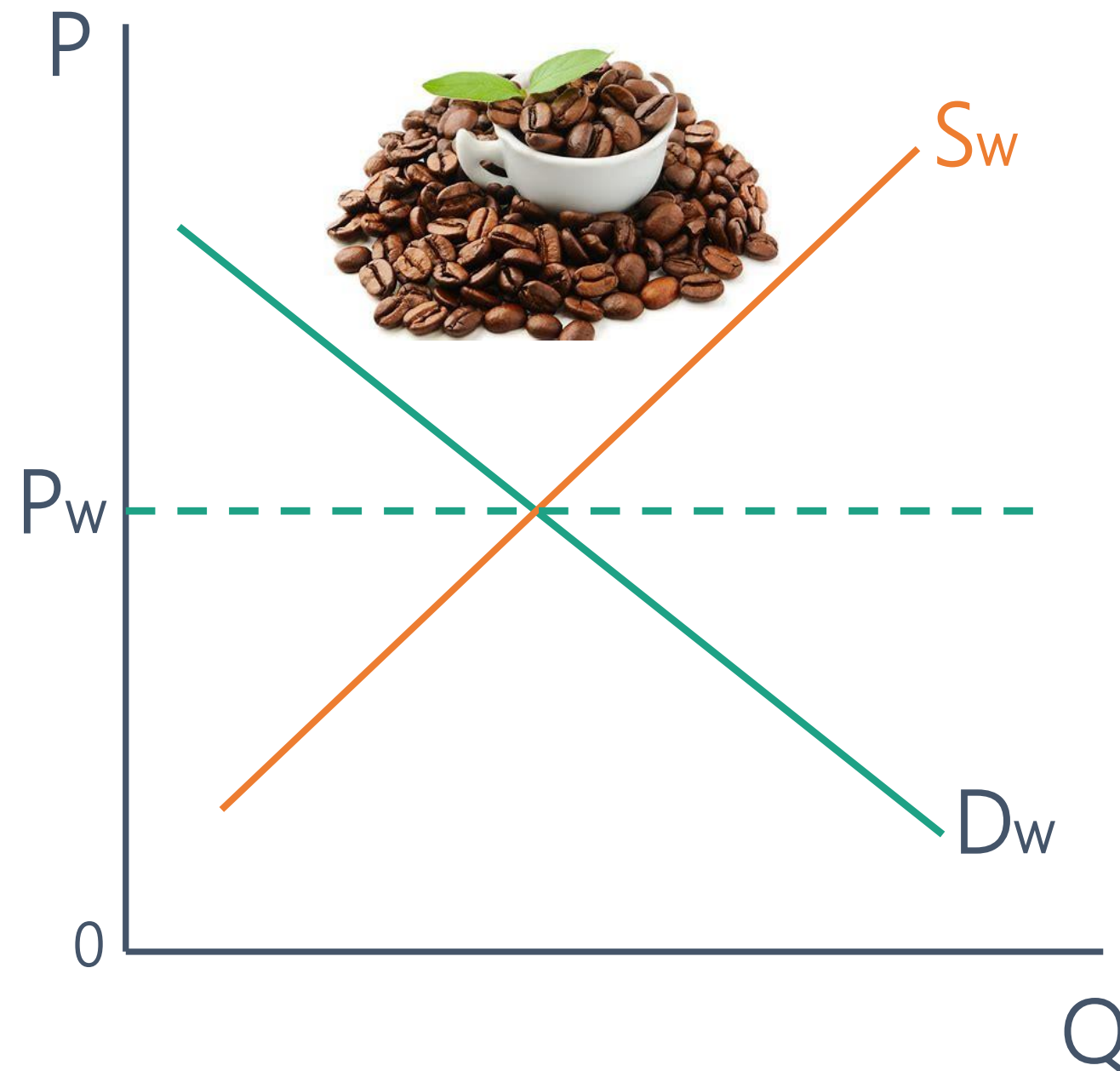
- The benefits above contribute to increases in domestic output → greater economic growth



→ In international trade, although not everyone gains, or gains equally, but the net benefits to society are positive.

The world market

World market price

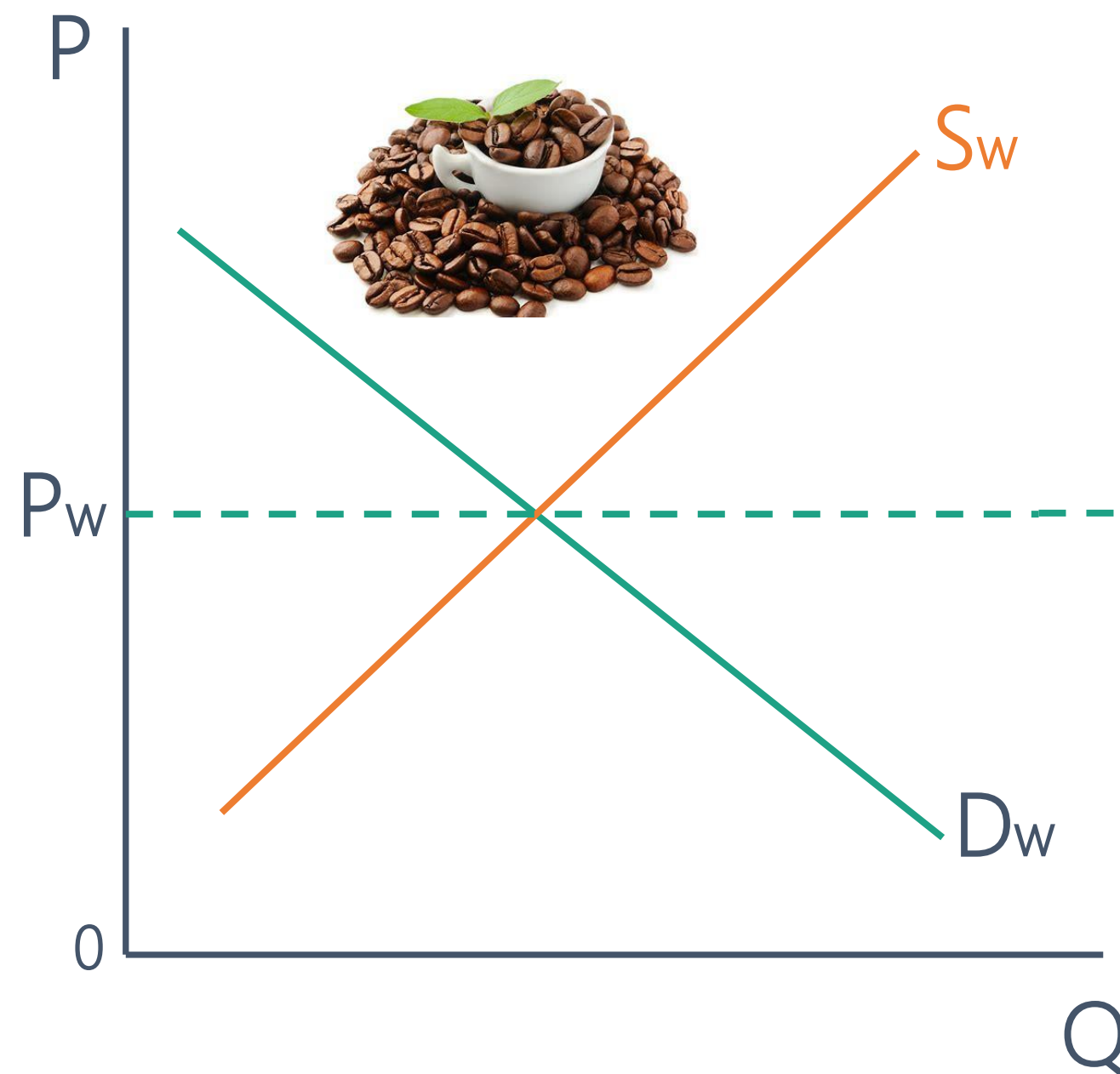


- Free world market for coffee bean – many individuals or firms in countries around the world who buy and sell coffee beans.
- The world coffee bean price is determined by world demand D_w and world supply S_w .
 - D_w – the sum of all country demand
 - S_w – the sum of all country supply
- All the countries that are part of this world market buy and sell coffee bean at the world price P_w .

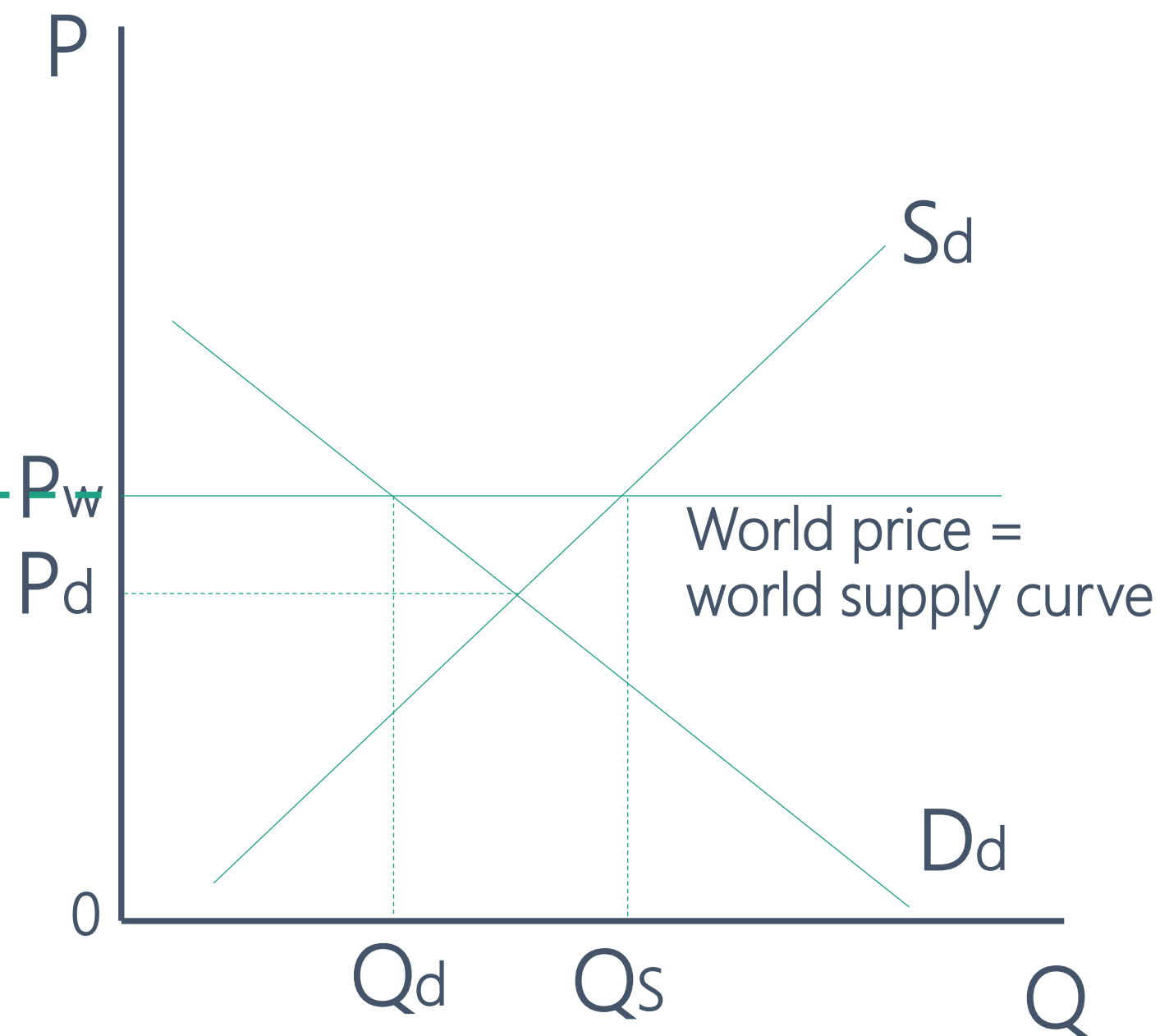
Should a country export or import a good?

10

World market price



Brazil



Price taker, accept world price P_w ,
 P_d is no longer relevant
 $P_w > P_d$

→ at higher price P_w , $Q_s > Q_d$
→ excess supply $Q_s - Q_d$ is
available to be exported

→ **EXPORT!**

Brazil

- Closed to international trade
- Domestic price P_d of coffee bean is determined entirely by the domestic demand D_d and supply S_d .
→ Autarky (self-sufficient)
- If It decides to open its economy to international trade. In the case of coffee bean, export or import?
- It is assumed that Brazil's coffee bean market is relatively small compared to the overall size of the world coffee market, so it cannot influence the world coffee bean price.
→ Perfectly elastic coffee supply curve, appearing as a horizontal line at the level of the world price.
→ All coffee beans in Brazil are bought and sold at the world price and no other price.

World price for coffee bean
- P_w

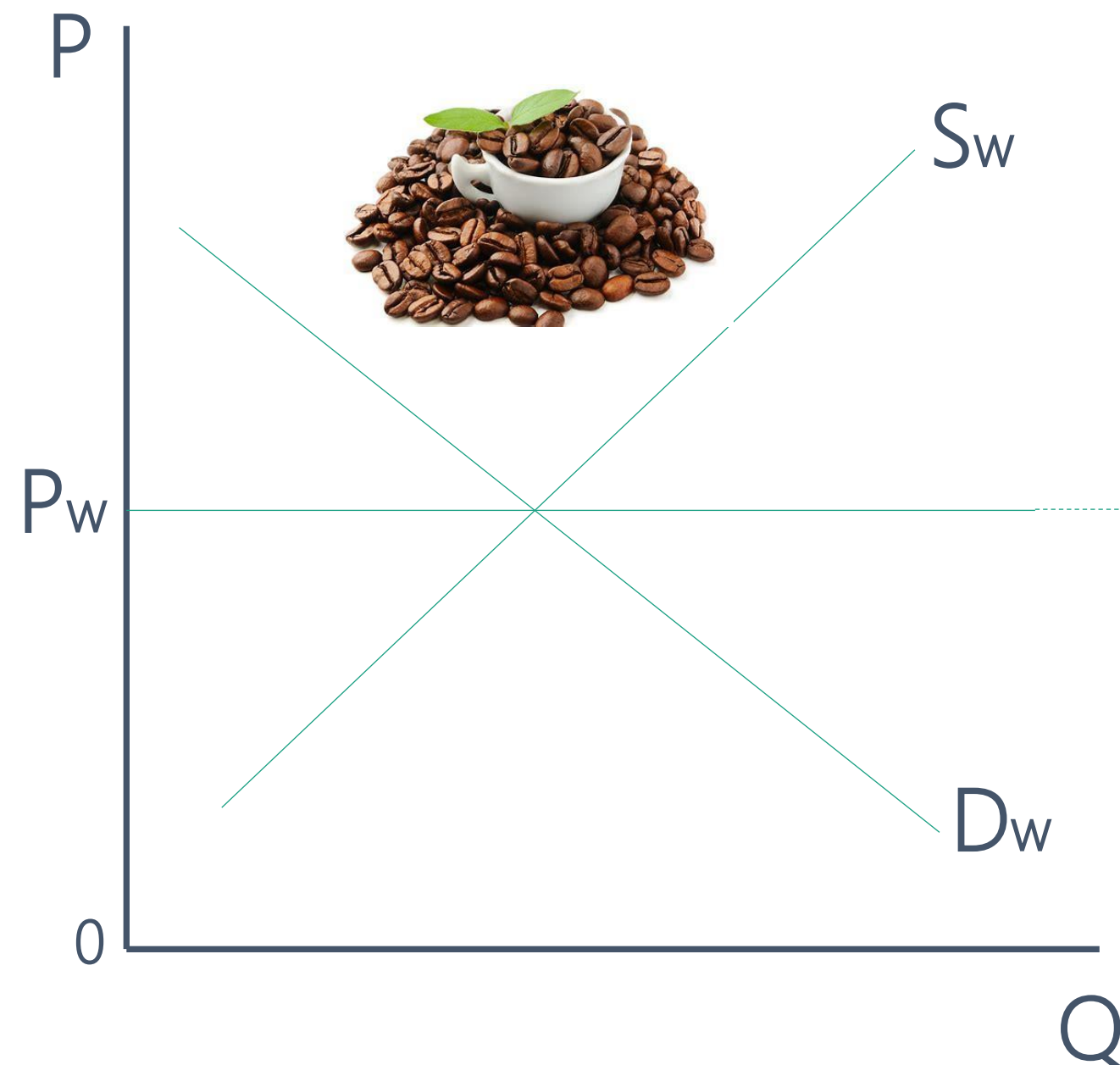
Should a country export or import a good?

11

World market price



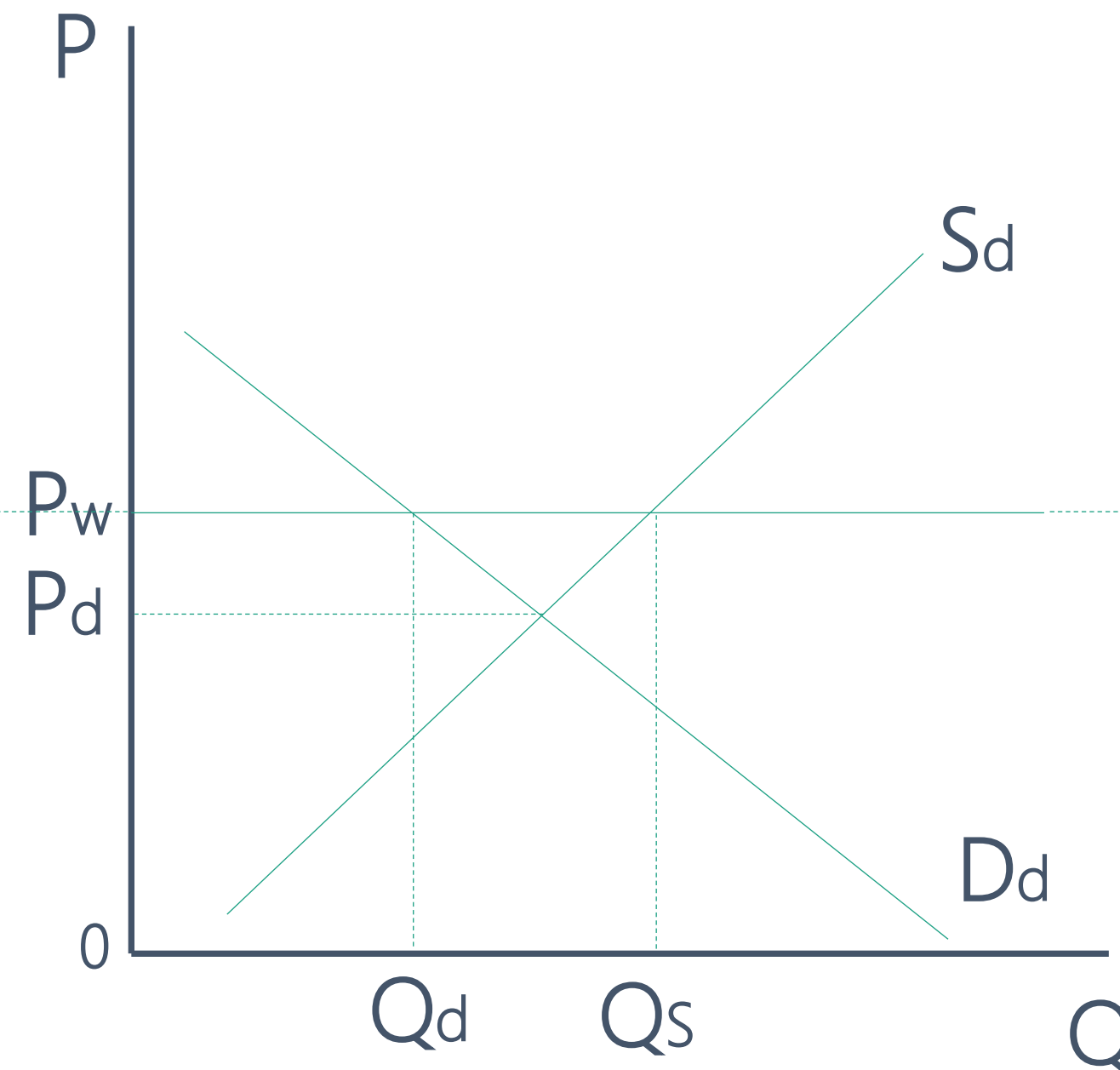
Brazil



World price for coffee bean
- **P_w**



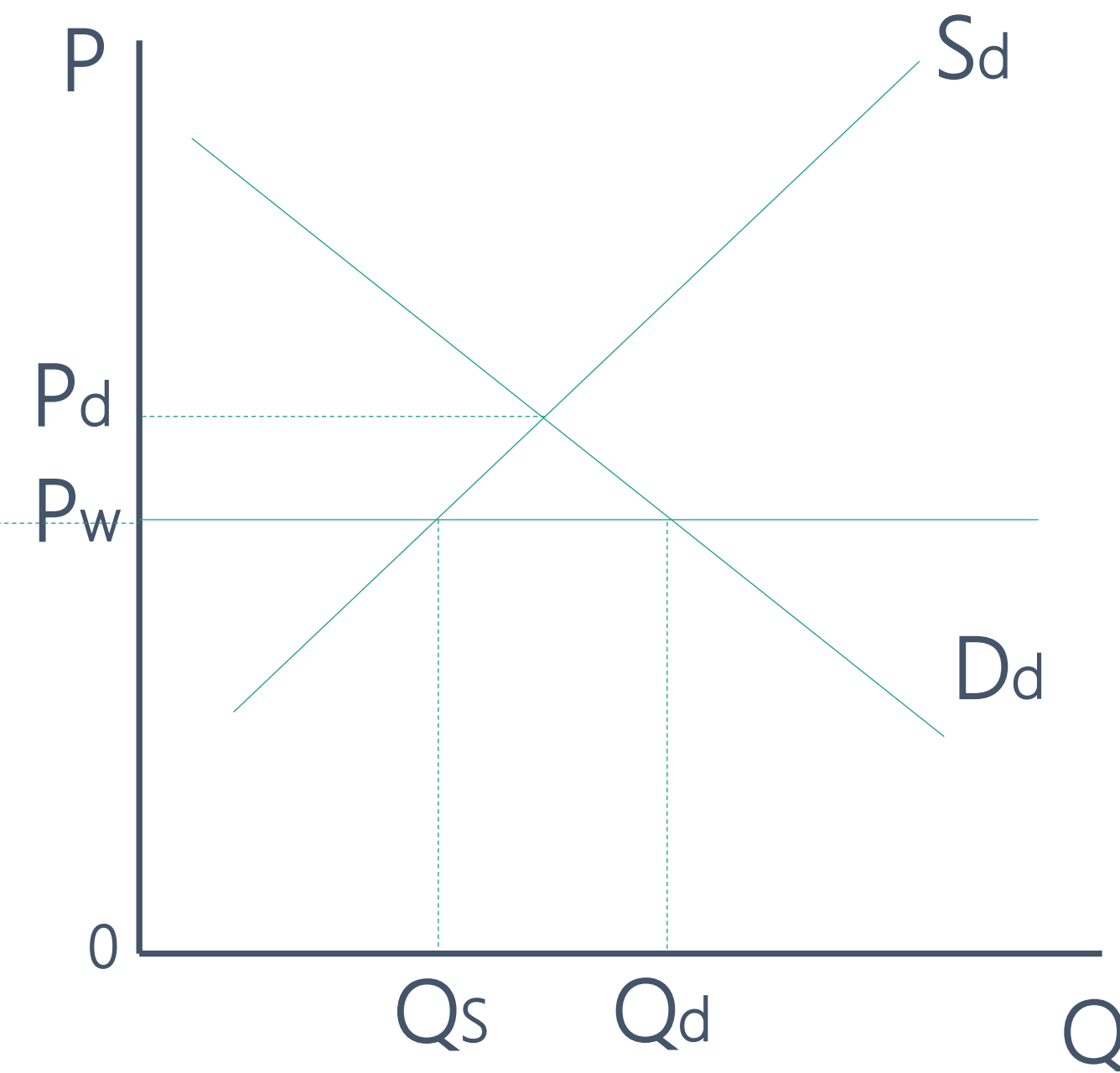
Brazil



Price taker, accept world price P_w ,
 P_d is no longer relevant
 $P_w > P_d$
→ at higher price P_w , $Q_s > Q_d$
→ **excess supply** $Q_s - Q_d$ is available
to be sold to buyers abroad, or
→ **EXPORT!**



Germany



$P_w < P_d$
→ at lower price P_w , $Q_d > Q_s$
→ **excess demand** $Q_d - Q_s$ is the
quantity of coffee bean to be
purchased from abroad, or
→ **IMPORT!**

Should a country export or import a good? 12



- A country **will export** a good if its domestic price without trade is lower than the world price and
- it **will import** a good if its domestic price without trade is higher than the world price.

Calculations

for exporting country Brazil



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- When Brazil was a closed economy, it was producing 60 million coffee beans and selling them at a price of \$5 per pound.
- After it opened up to international trade, it began accepting the world price of \$7 per pound.

a) Calculate the quantity of exports

domestic Q_s increased from 60m to 100m

Domestic Q_d fell from 60m to 20m.

Excess supply of $100m - 20m = 80m$ will be exported.

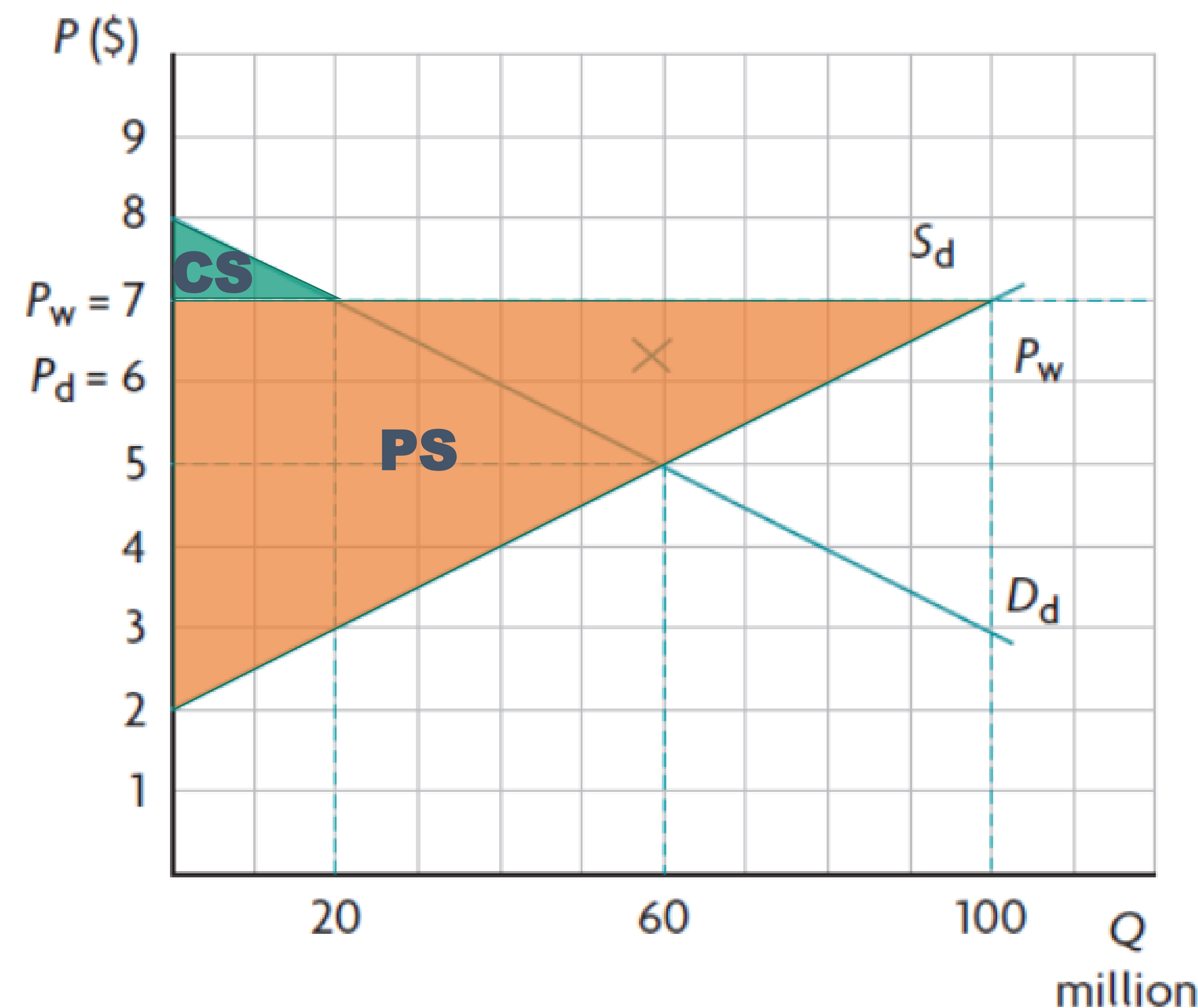
b) Calculate export revenues

Quantity of export * world price = $80m * \$7 = \560 million.

c) Who wins and who loses?

Producers: higher price and greater quantity supplied
→ higher revenue → better off

Consumers: higher price and smaller quantity demanded
→ worse off



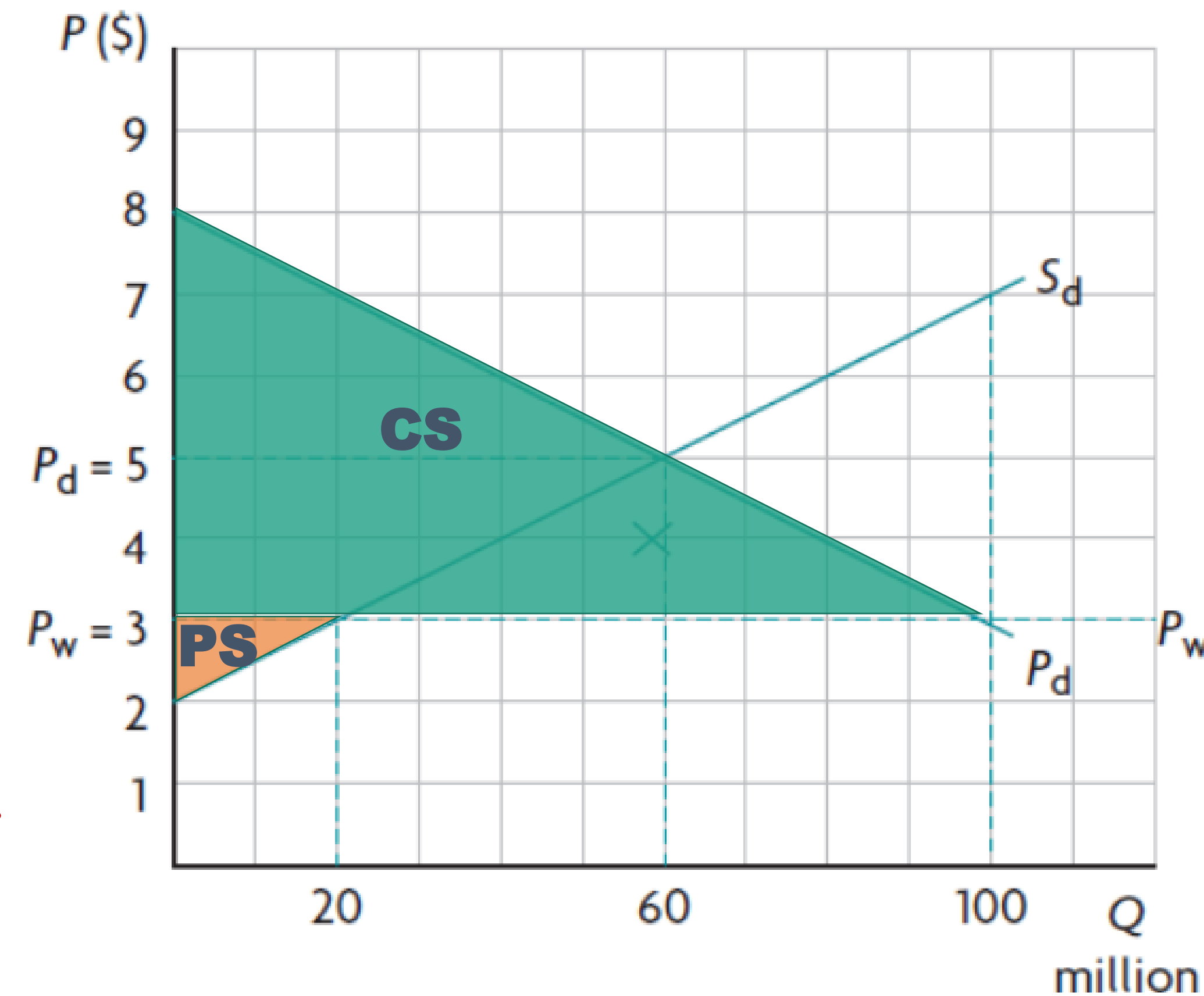
Calculations

for importing country Germany



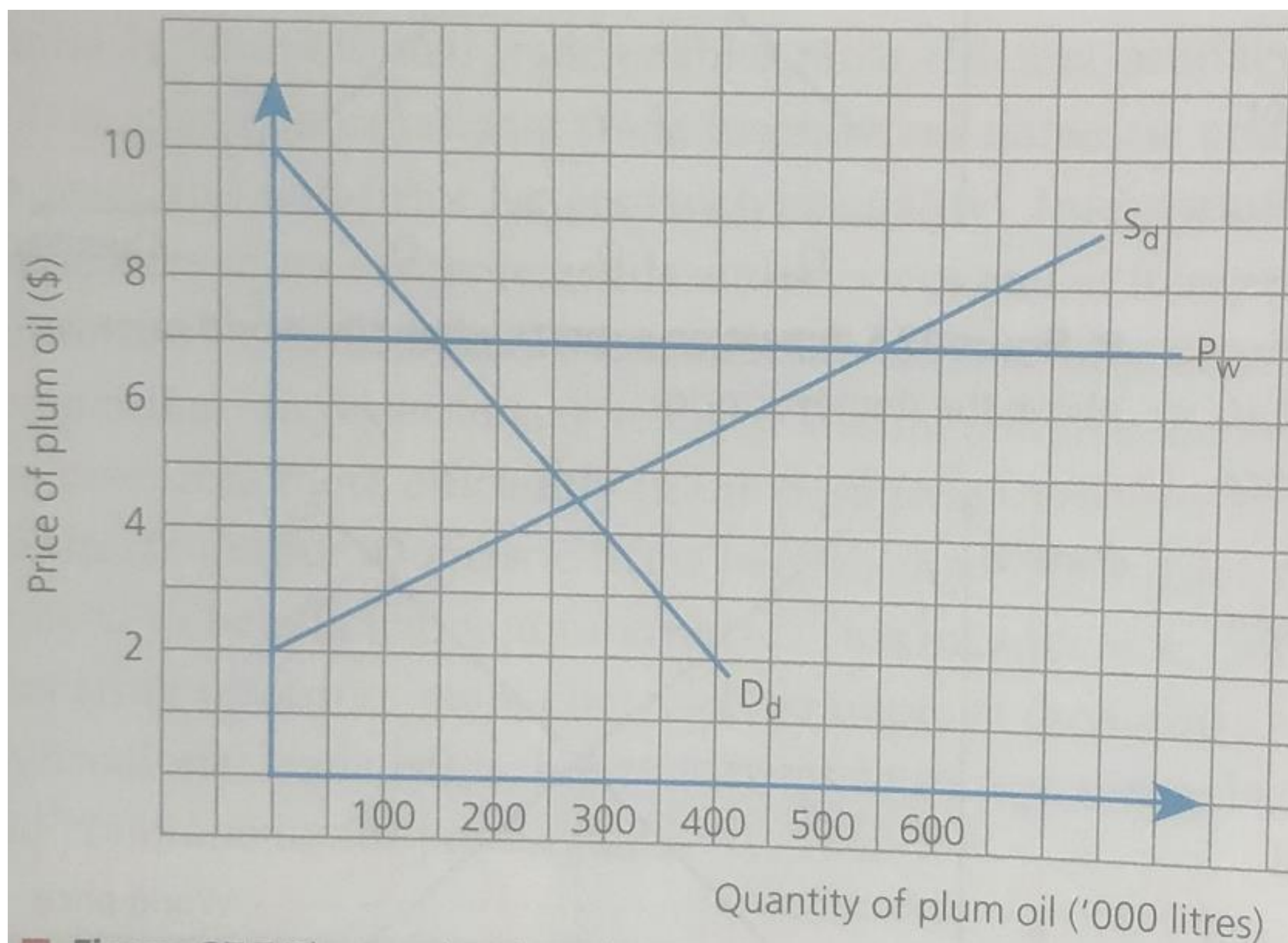
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- When Germany was a closed economy, it was producing 60 million pounds of coffee beans and selling them at a price of \$5 per pound.
 - After it opened up to international trade, it accepted the world price which is now \$3 per pound.
- a) Calculate the quantity of exports
- domestic Q_s fell from 60m to 20m
 - Domestic Q_d increased from 60m to 100m.
 - Excess demand of $100m - 20m = 80m$ will be imported.
- b) Calculate import expenditure
- Quantity of import * world price = $80m * \$3 = \240 million.
- c) Who wins and who loses?
- Producers: lower price and smaller quantity supplied
→ lower revenue → worse off
 - Consumers: lower price and greater quantity demanded
→ better off



Exercise

- Country Z is a developing country and one of the world's largest exporters of plum oil. The diagram below illustrates the market for plum oil in country Z. D_d and S_d represent domestic demand and supply per year, in thousands of liters, while P_w is the world price at \$7 per liter.



- Calculate the value of plum oil exports per year from country Z.

$$Q_s - Q_d = 550 - 150 = 400 \text{ thousand liters.}$$

- Calculate the social (community) surplus earned by stakeholders in the plum oil market in country Z under conditions of free trade.

$$\text{Social surplus} = CS + PS = 150 \cdot \frac{3}{2} + 550 \cdot \frac{(7-2)}{2} = 225 + 1375 = 1600 \text{ thousands.}$$

- Calculate the total value of domestic consumption of plum oil in country Z under free trade.

$$150 \cdot \$7 = \$1050 \text{ thousands.}$$

Absolute advantage

by Adam Smith, 18th century

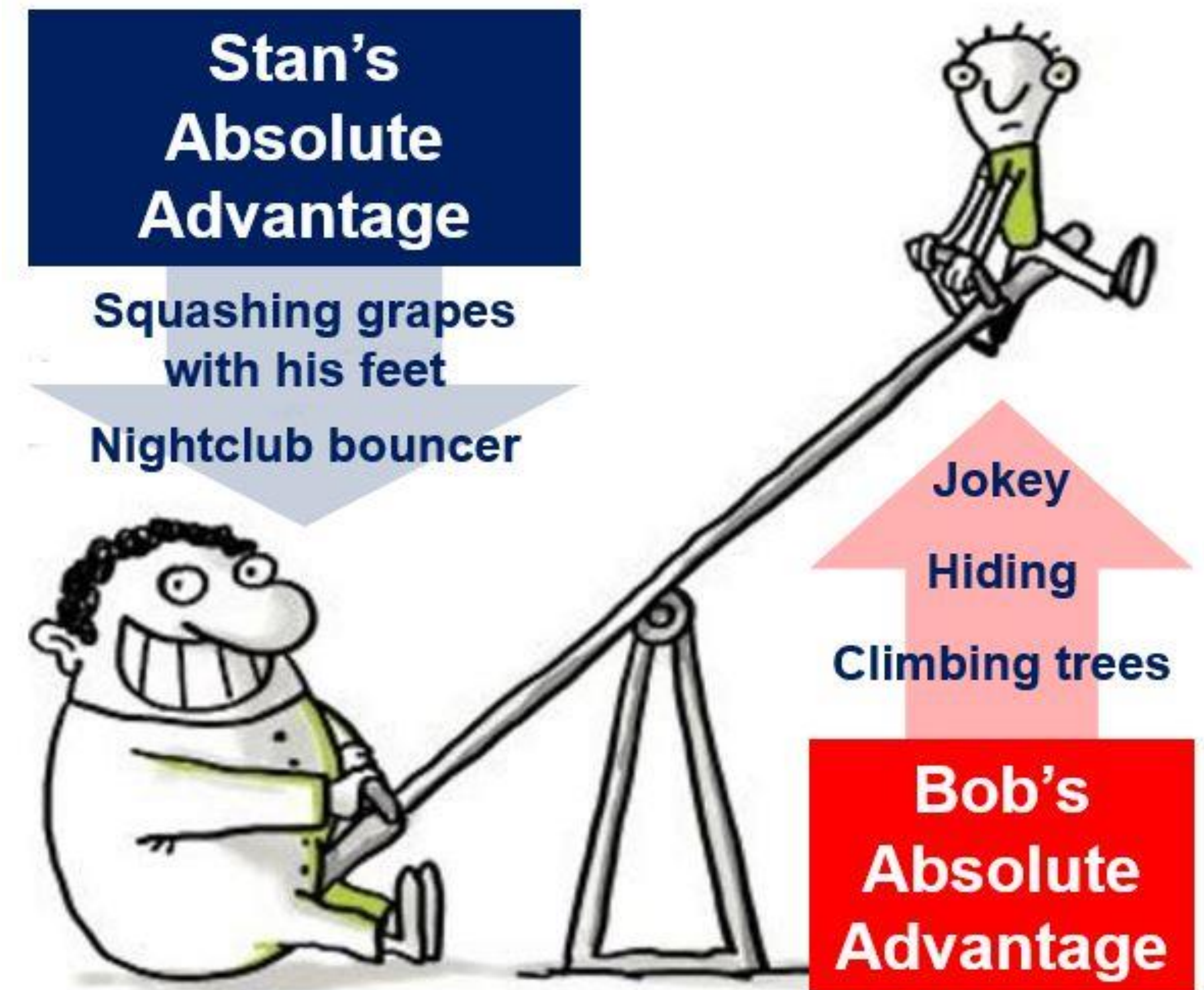
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Adam Smith believes that specialization and free trade can make all countries better off.

Absolute advantage refers to the ability of a country to:

→ produce a good using **fewer resources** than another country,
→ OR, if with the same quantity of resources, it can produce **more of the good** than another country.

- An absolute advantage occurs mainly because different countries have different factor endowments.
- If countries specialize in the output of what they are most efficient at producing, world output will subsequently increase. → **an increase in world production and consumption.**



Example of absolute advantage

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	Production possibilities when each country produces only rice or only teas (with same amount of labour)	
	Rice	Tea
Riceland	10 tons	2 tons
Tealand	3 tons	6 tons

Absolute advantage

OR

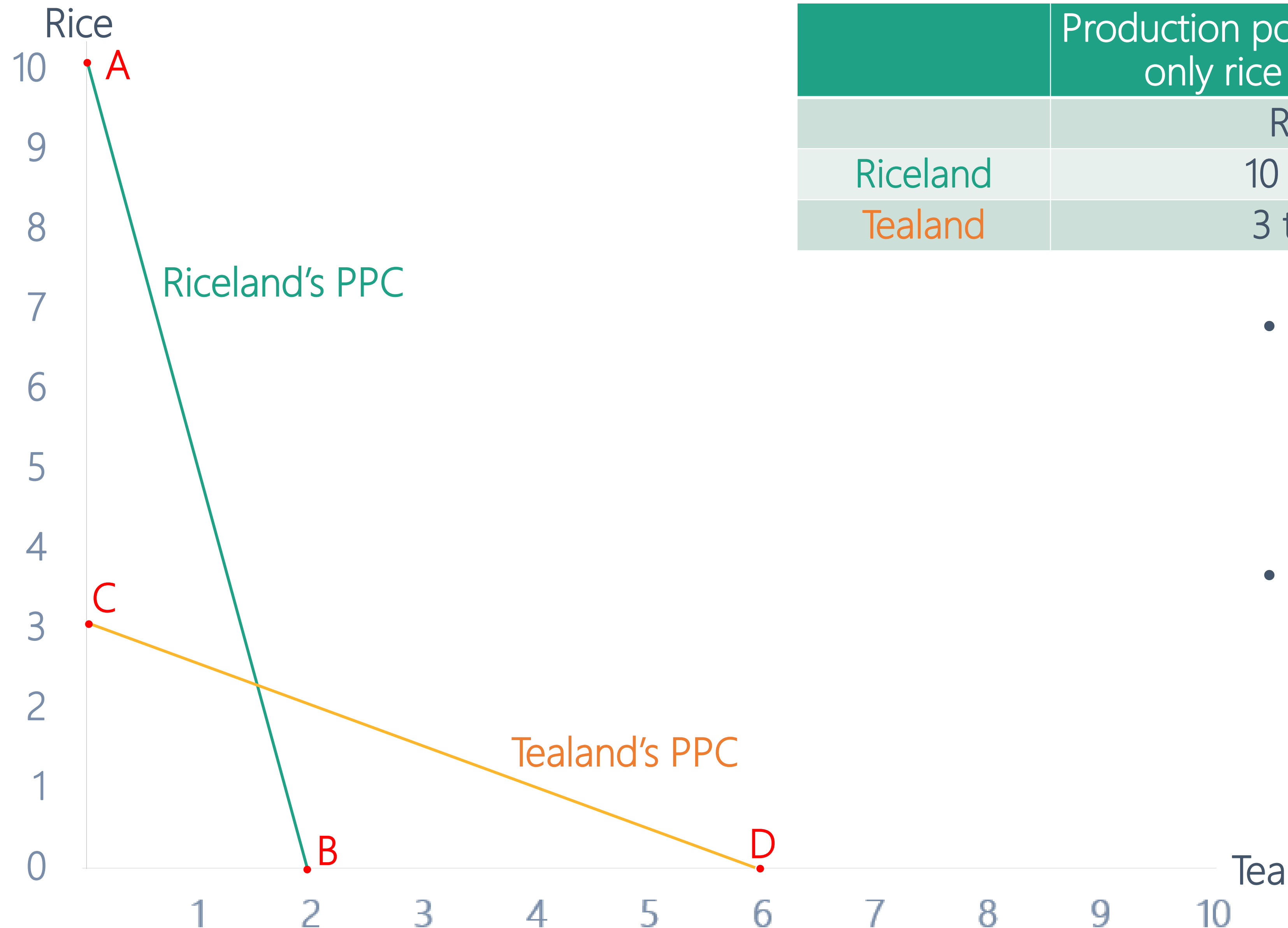
OR

Absolute advantage

- **Riceland** has an absolute advantage in rice. – It can produce 10 tons of rice compared to only 3 in Tealand. → Riceland should specialize in rice.
- **Tealand** has an absolute advantage in tea. – It can produce 6 tons of tea compared to only 2 in Riceland. → Tealand should specialize in tea.

Illustration with PPC curves

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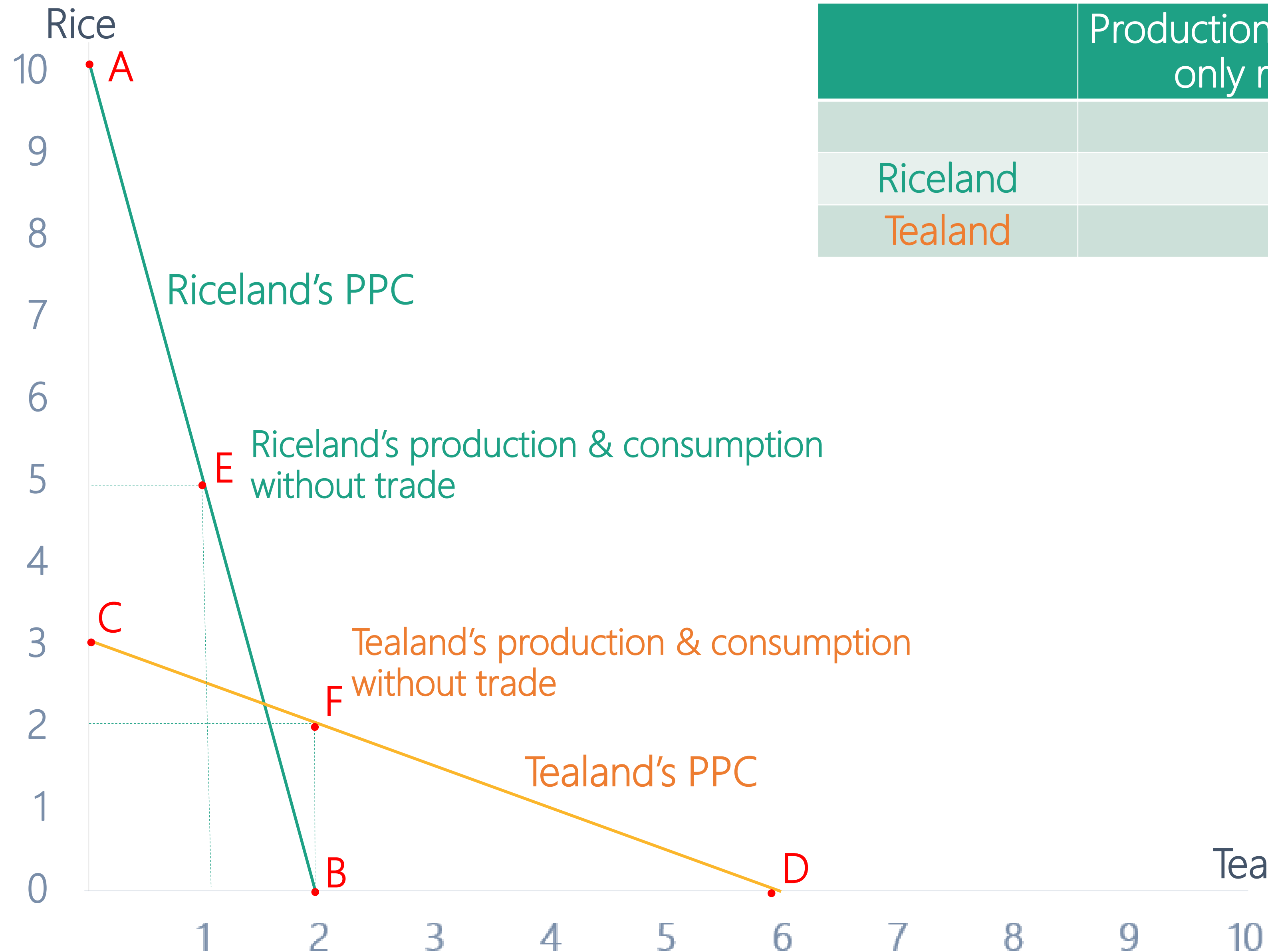


	Production possibilities when each country produces only rice or only robots (1 worker per year)	
	Rice	Tea
Riceland	10 tons	2 tons
Tealand	3 tons	6 tons

- Both countries can be producing somewhere on their PPC, due to specialization and trade they can **consume at a point outside their PPC. Why?**
- Specialization according to absolute advantage leads to a 'global' reallocation of resources where production takes place by the most efficient (low cost) producers.

Illustration with PPC curves

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	Production possibilities when each country produces only rice or only robots (1 worker per year)	
	Rice	Tea
Riceland	10 tons	2 tons
Tealand	3 tons	6 tons

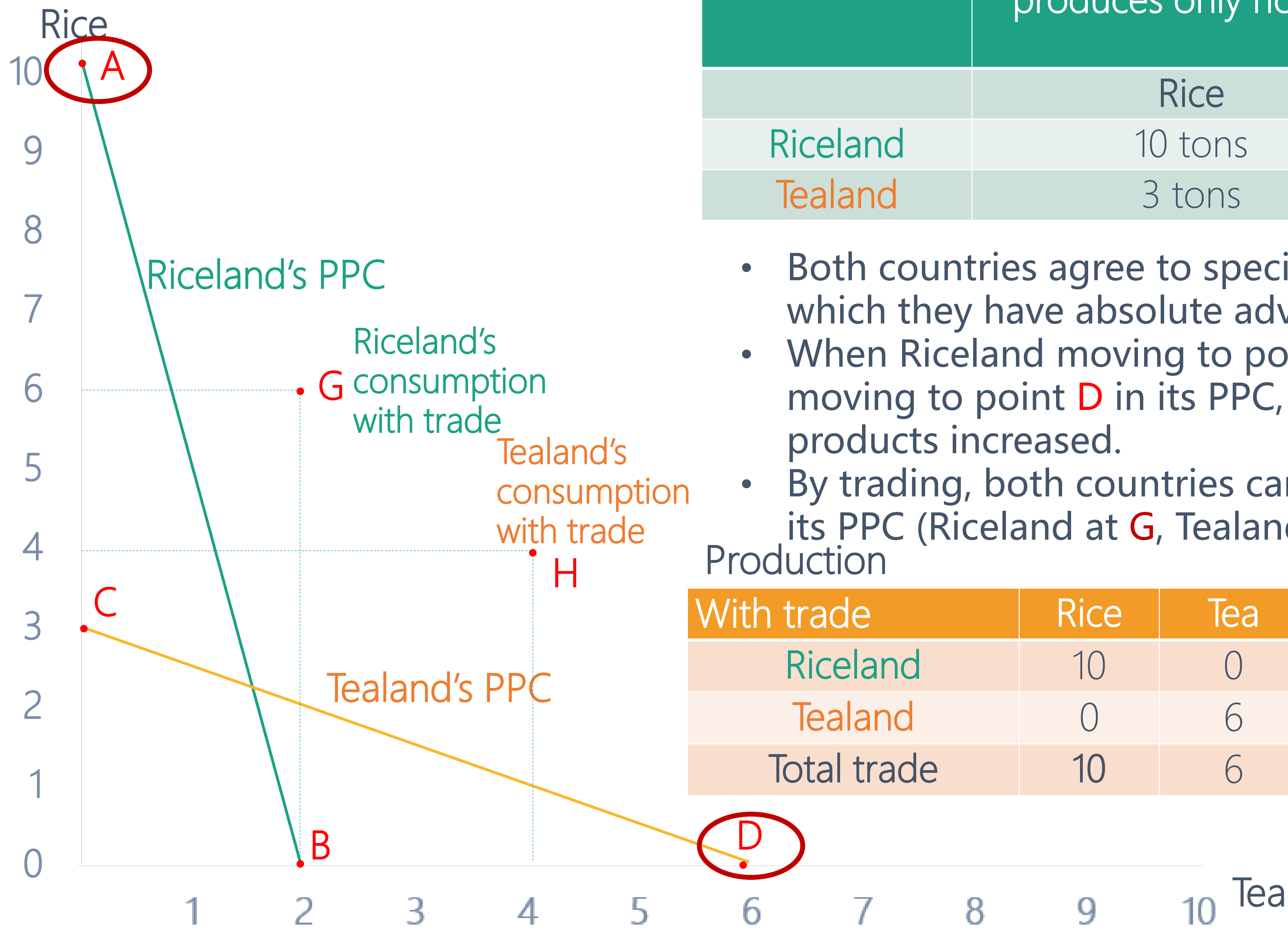
- Without trade (autarky), Riceland and Tealand will produce both of the products, they can produce anywhere along their PPC. For example, at point **E** and **F**.



Production & Consumption

Without trade	Rice	Tea
Riceland	5	1
Tealand	2	2
Total without trade	7	3

Illustration with PPC curves



	Production possibilities when each country produces only rice or only robots (1 workers per year)	
	Rice	Tea
Riceland	10 tons	2 tons
Tealand	3 tons	6 tons

- Both countries agree to specialize and export the good in which they have absolute advantage.
- When Riceland moving to point **A** of its PPC and Tealand moving to point **D** in its PPC, the total output of both products increased.
- By trading, both countries can consume at a point outside its PPC (Riceland at **G**, Tealand at **H**).

Production

With trade	Rice	Tea
Riceland	10	0
Tealand	0	6
Total trade	10	6

Consumption

With trade	Rice	Tea
Riceland	6	2
Tealand	4	4
Total trade	10	6

Comparative advantage

by David Ricardo, in 19th century

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- **Comparative advantage** refers to the situation where one country has a **lower opportunity cost** (relative cost) in the production of a good than another country.
- Countries can gain from **specialization** and trade even if one country has an absolute advantage in both goods.



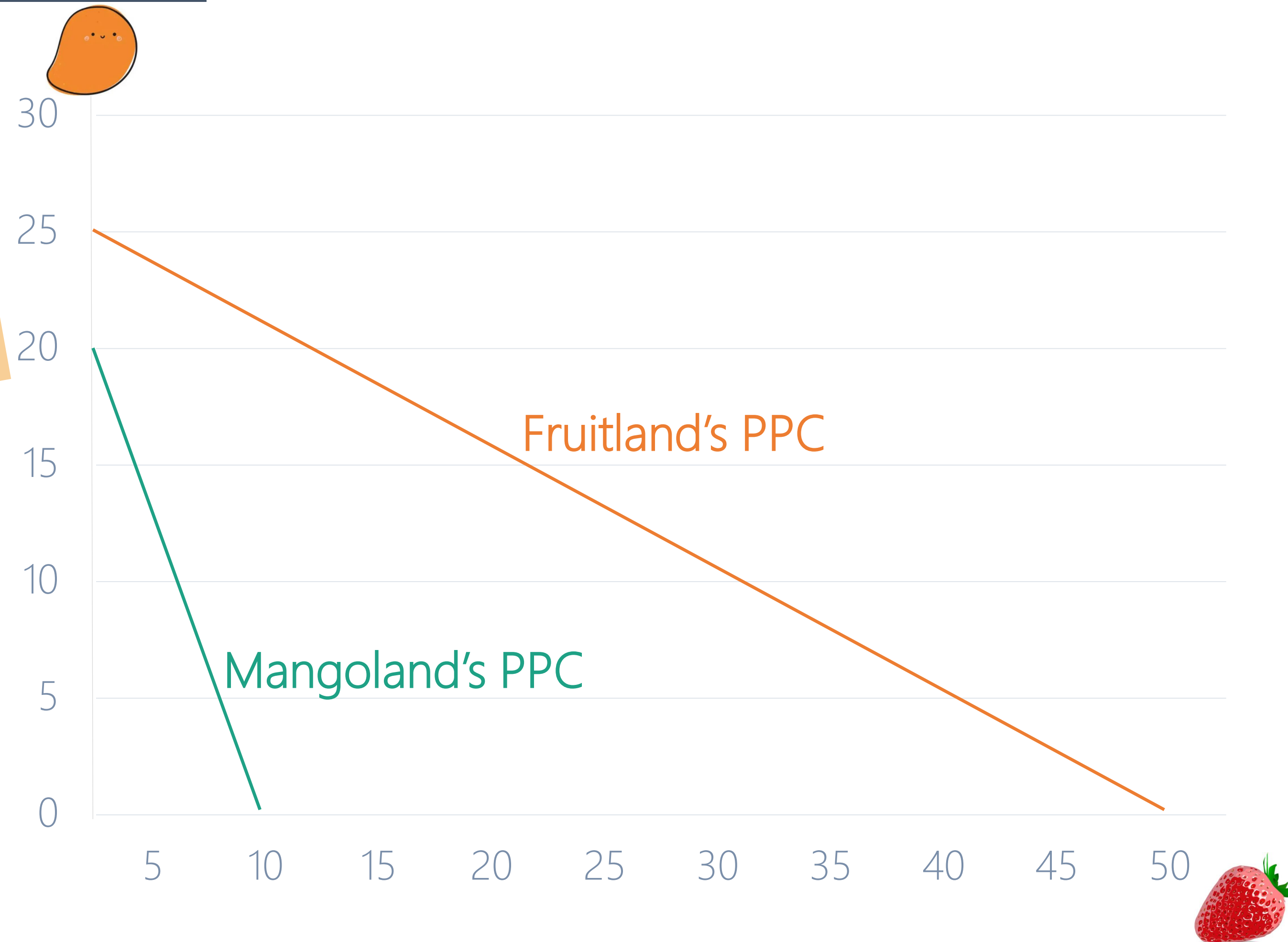
Example of absolute & comparative advantage

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Production possibilities when each country produces only mango or only strawberry		
	Mango	Strawberry
Mangoland	20	10
Fruitland	25	50

Absolute advantage OR Absolute advantage

→ Fruitland has an absolute advantage in the production of both mango and strawberry, with the same resources, it can produce more of both goods



Fruitland's PPC lies entirely above the PPC of Mangoland.

Comparative advantage

Calculating opportunity costs

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$$\text{Opportunity cost} = \frac{\text{Sacrifice of one good}}{\text{Gain of the other good}}$$

A country has a comparative advantage in the production of the good that has a lower opportunity cost (lower relative cost)

	Production possibilities when each country produces only mango or only strawberry		Opportunity cost of mango	Opportunity cost of strawberry
	Mango	Strawberry	comparative advantage	
Mangoland	20	OR 10	$\frac{10 \text{ units of strawberries}}{20 \text{ units of mangos}} = 1/2$	$\frac{20 \text{ units of mangos}}{10 \text{ units of strawberries}} = 2$
Fruitland	25	OR 50	$\frac{50 \text{ units of strawberries}}{25 \text{ units of mangos}} = 2$	$\frac{25 \text{ units of mangos}}{50 \text{ units of strawberries}} = 1/2$

- If **Mangoland** wants to produce more mangos, it needs to sacrifice a smaller quantity of strawberries than does Fruitland. → comparative advantage in mango production.
 - Mangoland have to give up **1/2 units** of strawberries to produce a unit of Mango
 - Fruitland would have to give up **2 units** of strawberries to produce a unit of Mango
- If **Fruitland** wants to produce more strawberries, it needs to sacrifice a smaller quantity of mango than does Mangoland → comparative advantage in strawberry production.

Example of comparative advantage

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	Production possibilities		Opportunity cost of mango	Opportunity cost of strawberry
	Mango	Strawberry		
Mangoland	20	10	1/2	2
Fruitland	25	50	2	1/2



Production specialization



	Mango	Strawberry
Mangoland	20	0
Fruitland	0	50



Without trade

If Mangoland want to consume 5 units of strawberries...

If Fruitland want to consume 5 units of mango...

	Mango	Strawberry
Mangoland	$20 - 10 = 10$	$0 + 5 = 5$
Fruitland	$0 + 5 = 5$	$50 - 10 = 40$

Mangoland: sacrifice 10 x  → 5 x 

Fruitland: sacrifice 10 x  → 5 x 

With trade

If Mangoland and Fruitland decide to trade mango and strawberry at the price ratio of 1:1 (1 units of mangos trades for 1 units of strawberries). They agree to exchange(trade) 5 units.

	Mango	Strawberry
Mangoland	$20 - 5 = 15$	$0 + 5 = 5$
Fruitland	$0 + 5 = 5$	$50 - 5 = 45$

5 x  ↔ trade ↔ 5 x 

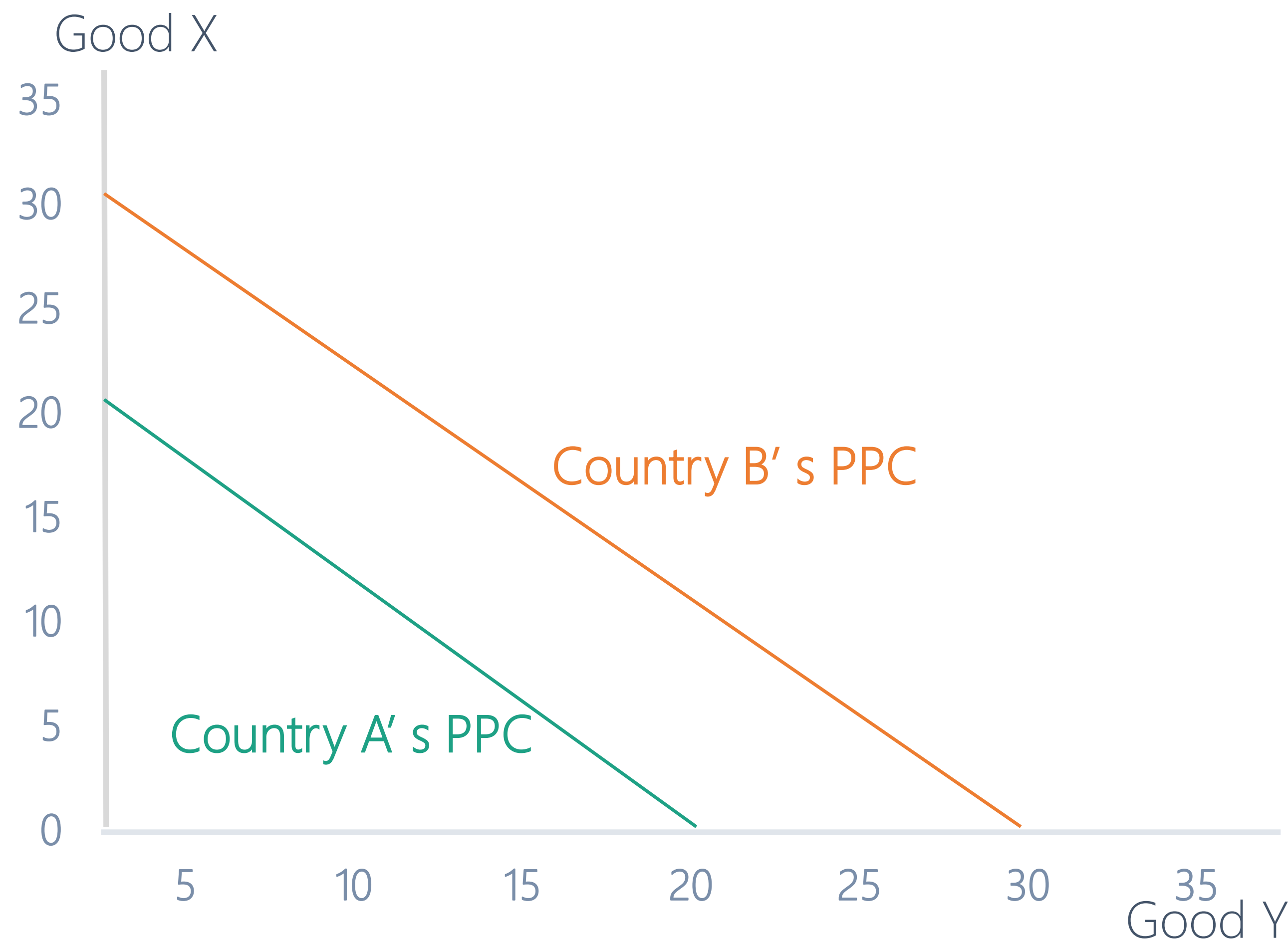
The law of comparative advantage

- If countries specialize and trade according to their comparative advantage, global production and consumption will increase because of an improvement in the **global allocation of resources**, making all countries involved better off.
- Both countries **produce at a point on their PPCs**, but through specialization and trade they **consume at a point outside their PPC**.
- **Absolute advantage is a special case of the theory of comparative advantage.**

The case of parallel PPCs

- **Country B** has an absolute advantage in the production of both good X and good Y.
- **Country A** and **country B's** PPCs are parallel to each other, which means two countries face **identical opportunity costs** for the two goods. → no comparative advantage in the production of one or the other good.

→ No possibilities for countries to gain from specialization and trade, no point in trading.



Revisit: should a country export or import?

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- If a country have lower domestic price compared to the world price indicates that this country has a **comparative advantage** in the production of this product. → **export**
- If a country has higher domestic price compared to the world price indicates that this country has a **comparative disadvantage** in the production of the product → **import**

Exercise

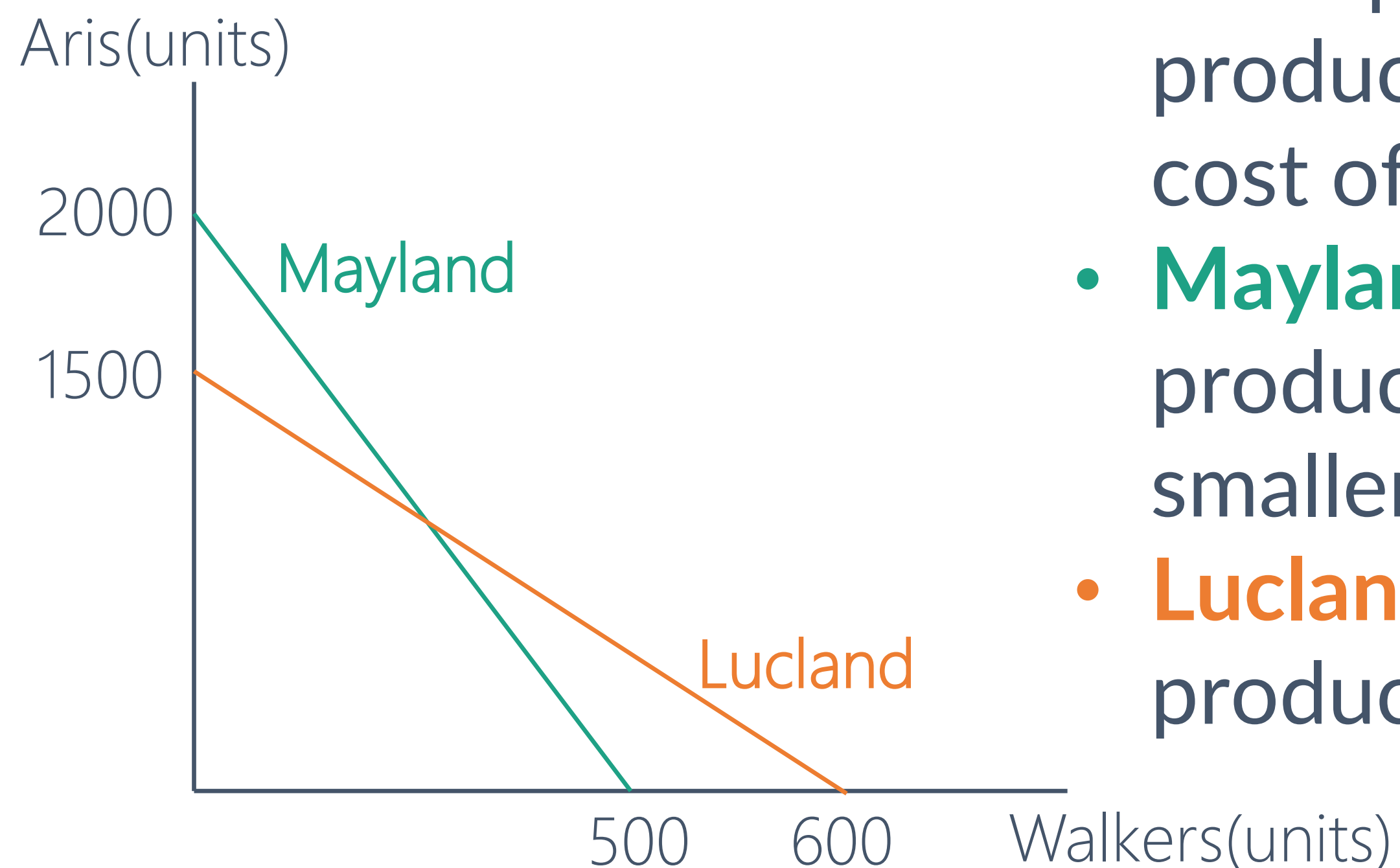
Use the production possibilities data below and an appropriate diagram to explain which country should specialize in the production of Aris and which country should specialize in the output of Walkers.

Country	Aris (units)	Walkers(units)
Lucland	1500	600
Mayland	2000	500

Exercise solution

Country	Aris (units)	Walkers(units)	Opportunity cost of Aris	Opportunity cost of Walkers
Lucland	1500	600	0.4	2.5
Mayland	2000	500	0.25	4

Mayland should specialize in (and export) Aris as it gives up 1 unit of walkers to gain 4 units of Aris (whereas **Lucland** gains only 2.5 units of Aris if it gives up the same unit of Walkers).



- The opportunity cost of **Mayland** giving up production of Aris is greater than the opportunity cost of **Lucland** giving up production of Aris.
- **Mayland** has the absolute advantage in the production of Aris, since it can produce Aris at a smaller opportunity costs.
- **Lucland** has the absolute advantage in the production of Walkers.

Sources of comparative advantage

1. Factor endowments and the quality of factors of production.

- E.g. United Arab Emirates, Kuwait, Russia are well endowed in oil supply. These countries can increase production through specialization and international trade.
- Other countries do not have access to oil so need to specialize in producing other goods and services using factor resources that they are better endowed with.

2. Levels of technology

- Workers with access to the latest machinery and technologies will be more productive.
- High-income countries have the financial capability to invest in physical capital and superior technologies, whereas this is not possible in low-income countries.

3. Investment in research and development (R&D)

- The ability to invest in R&D and to be innovative can give countries a competitive advantage. R&D expenditure can also generate network procedures and processes that reduce the relative costs of production.
 - South Korea and Finland spend almost 3% to 4% of their GDP on R&D.
 - Countries like Algeria, Indonesia spend less than 0.1% on R&D.



Sources of comparative advantage

4. Price stability

- The inability to stabilize prices can damage the comparative cost advantages of a country.
- High prices mean that foreign buyers are less willing and able to purchase the exports of domestic firms, even if these may be of higher quality.

5. Exchange rate fluctuations

- A change in the exchange rate affects the relative prices of exports and imports.
- A long-term unfavorable change in the exchange rate can trigger a reduction in the demand from overseas customers due to prices being relatively higher.



Limitations of the theory of comparative advantage



The unrealistic assumptions of comparative advantage:

- ① **Factors of production are assumed to be fixed.**
 - In reality, resources like labor and capital often move from country to country.
 - There are changes in resource quality, such as labor acquires more skills and education.
 - Factor endowments change over time → comparative advantage also changes.
- ② **Technology is assumed to be fixed.**
 - New technologies are continuously being introduced → comparative advantage change
- ③ **Perfect mobility of factors of production within the country.** Factors of production can be switched between different industries without any loss of efficiency.
- ④ **Full employment of all resources** (countries produce on their PPCs)
- ⑤ Free trade – trade flows (imports & exports) are determined entirely by market force. – **no barriers to international trade.**
- ⑥ **Homogeneous products**
- ⑦ **Transportation costs are ignored.**
- ⑧ **Perfect knowledge** of pricing information available to both consumers and producers, despite of complications such as exchange rate fluctuations and relative inflation rates in different countries.

Limitations of the theory of comparative advantage



2. Specialization according to comparative advantage may not allow necessary structural changes to occur in an economy.

- Structural changes in developing economies from agricultural sector to manufacturing and services sector → change of comparative advantage
- If the developing economies specialize on agricultural products, it won't permit the necessary structural changes to take place.

3. Trade on the basis of comparative advantage may lead to excessive specialization.

- Overspecialization → the country may become vulnerable if it experiences global recession or product price fluctuation.
 - Falling export revenue, falling income and economic decline.