Trade policy

School of Economics, University College Dublin

Autumn 2017

Bombardier Inc + Add to myFT

US blow for Bombardier puts jobs in Canada and UK at risk

Washington backs Boeing by slapping preliminary tariffs of up to 219% on rival

Bombardier Inc + Add to myFT

Airbus to take majority stake in Bombardier's C-Series jet arm

Aircraft makers say deal will save jobs in UK, Canada and China amid spat with Boeing

The deal could allow Bombardier to circumvent tough US trade penalties © AFP

The first lectures of this course focused on the general equilibrium

- Start with market structure, factor endowments, available technology
- All prices determined in equilibrium by conditions such as trade balance, marginal cost, etc.
- Analyse income and substitution effects

Analysis of trade policy focuses on partial equilibrium

- Only concerned with a single good or price
- Assume that neither incomes or other price changes happen
- Welfare is only affected by the consumption of a single good

Trade policy is a way for countries to deal with the distributional consequences of trade along

- Factors, following from the HO-model
- Industries, following from the Specific Factors model

There are a number of economic justifications for trade policy

1. Income distribution
2. Raising revenue
3. Protect infant industries
4. Satisfying consumption goals
5. National security

There are also a number of justifications for trade policy that make little economic sense

1. Pauper labour
2. Fairness
3. Nationalism

These don't make sense as they are based on misunderstanding of what policy might achieve.

Pauper labour argument is based on idea that competing with foreign imports will drive domestic wages down.

- Down to the low level of poor countries

Ricardian model tells us that poor countries have low wages because they are less productive.

- Trade will actually increase wages in trading countries

One caveat in terms of wages is the factor price equalisation implied by the HO-model

- Wage level will be above poor country but below rich country

Research suggests that much of wage difference is due to technological differences, preventing PFE.

Some argue that it is unfair to make workers compete with workers who are either

- More productive
- Lower paid

Trade is not a zero-sum gain as there are benefits for both countries.

The nationalist argument entails that one should buy from home producers so that the benefits won't go to foreigners.

- Confuses costs and benefits as households benefit from consumption and producers incur production costs

One would be better of import cheaper goods paid for with exports.

In most cases protectionist measures are a second best

- Way to cope with market imperfections
- Provide time/resources for firms to undertake cost-reducing investments
- Compensate globalisation losers; labour allocation away from declining industries

Set policy is often the result of various drivers

- Special interest groups
- Distortion created by voting; e.g. over-representation of rural areas

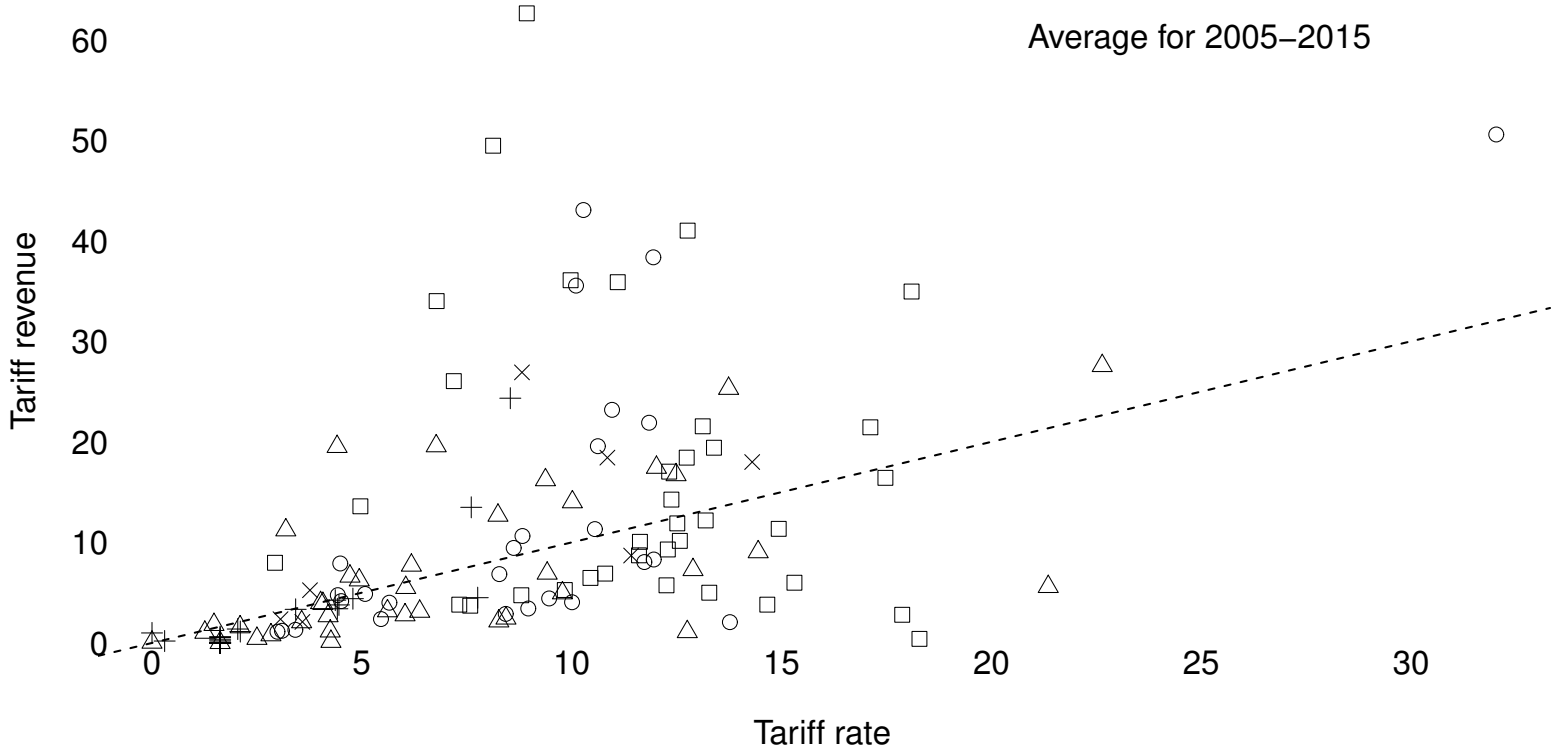
The political economy aspects of trade we will discuss in more detail next lecture.

Most common type of trade protection are tariffs which often play an important fiscal role as it provides a source of income

- American budget depended on tariffs until income tax was introduced in 1913
- Many developing countries lack fiscal capabilities and need tariffs to augment their budget

Average tariff rate and revenue

source: WDI



Tariffs are taxes levied on imported goods, there are two types

1. Ad valorem tariff; based on the value of the imported good (e.g. 10% of wheat imports)

$$p = p_w(1 + \tau)$$

2. Specific tariff; fixed charge for each unit of imported good (eg. 5 euro per barrel of oil)

$$p = p_w + \tau$$

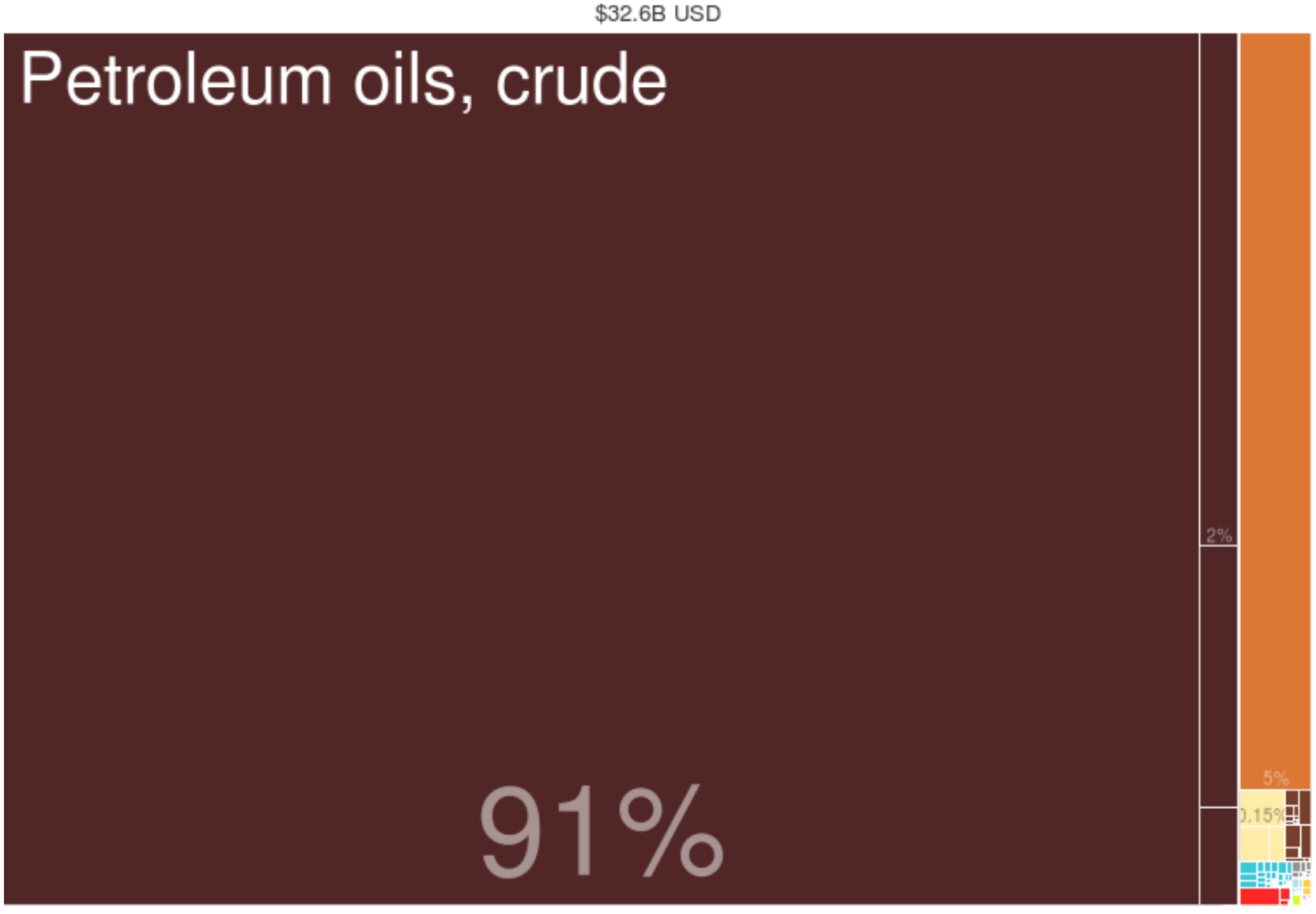
Q: How are tariffs implemented?

A: At the border.

By custom officers who will determine

- The type of good
- The price to use for ad valorem tariffs

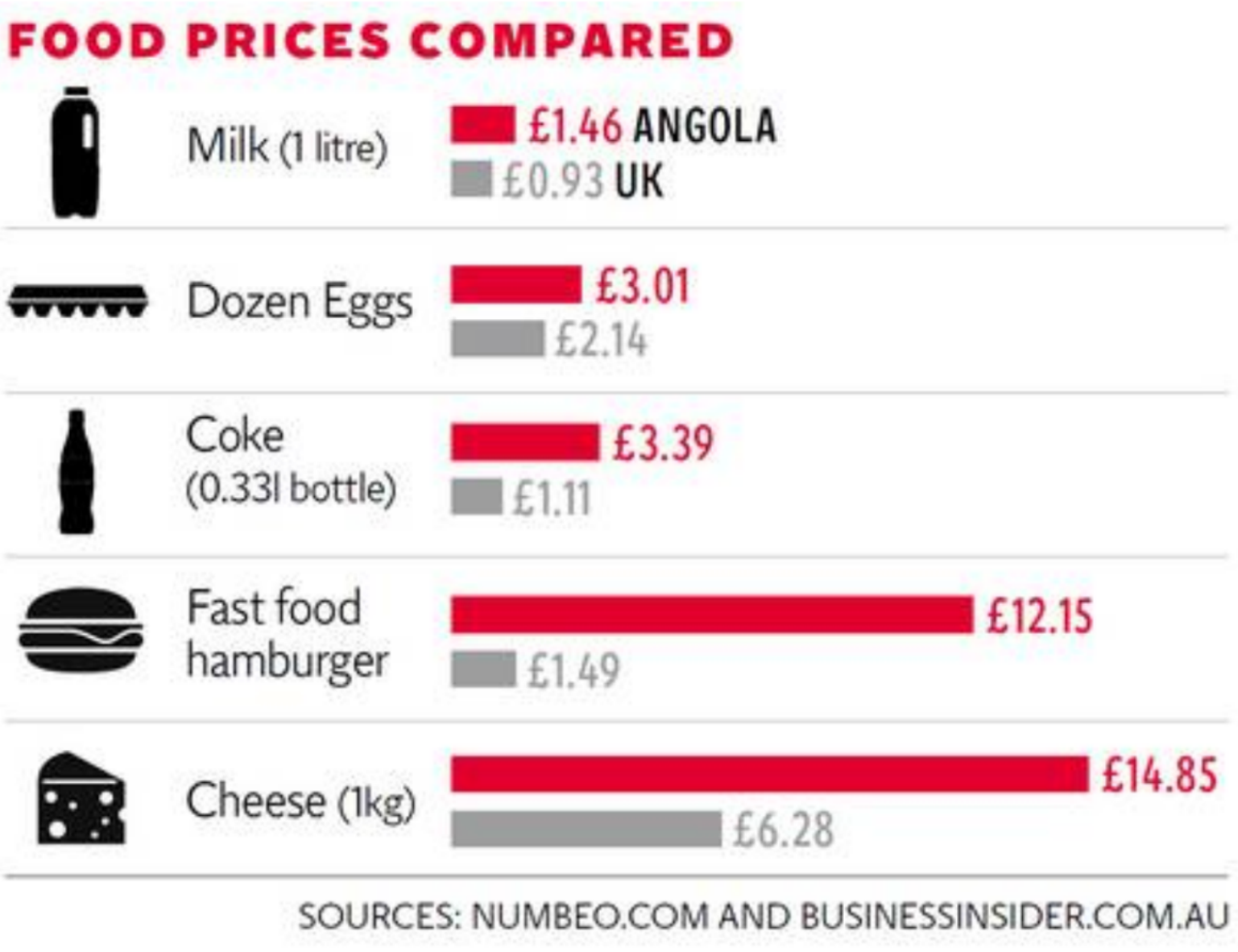
NB - custom officers can, sometimes, be bribed.


$32.6B USD
Petroleum oils, crude
91%
2%
5%
0.15%

Angola is the second largest oil exporter in Africa meaning a large influx of foreign reserves. This makes Luanda, the capital, one of the most expensive cities in the world. In 2014 the government imposed tariffs in order to diversify the economy.

- Local food prices experienced a large increase
- Import tariffs offset the decrease in inflation

Comparison of food prices in Angola and the UK



Let's consider the effect of a tariff on the market for apples.
In the absence of trade we have

$$p > p^*$$

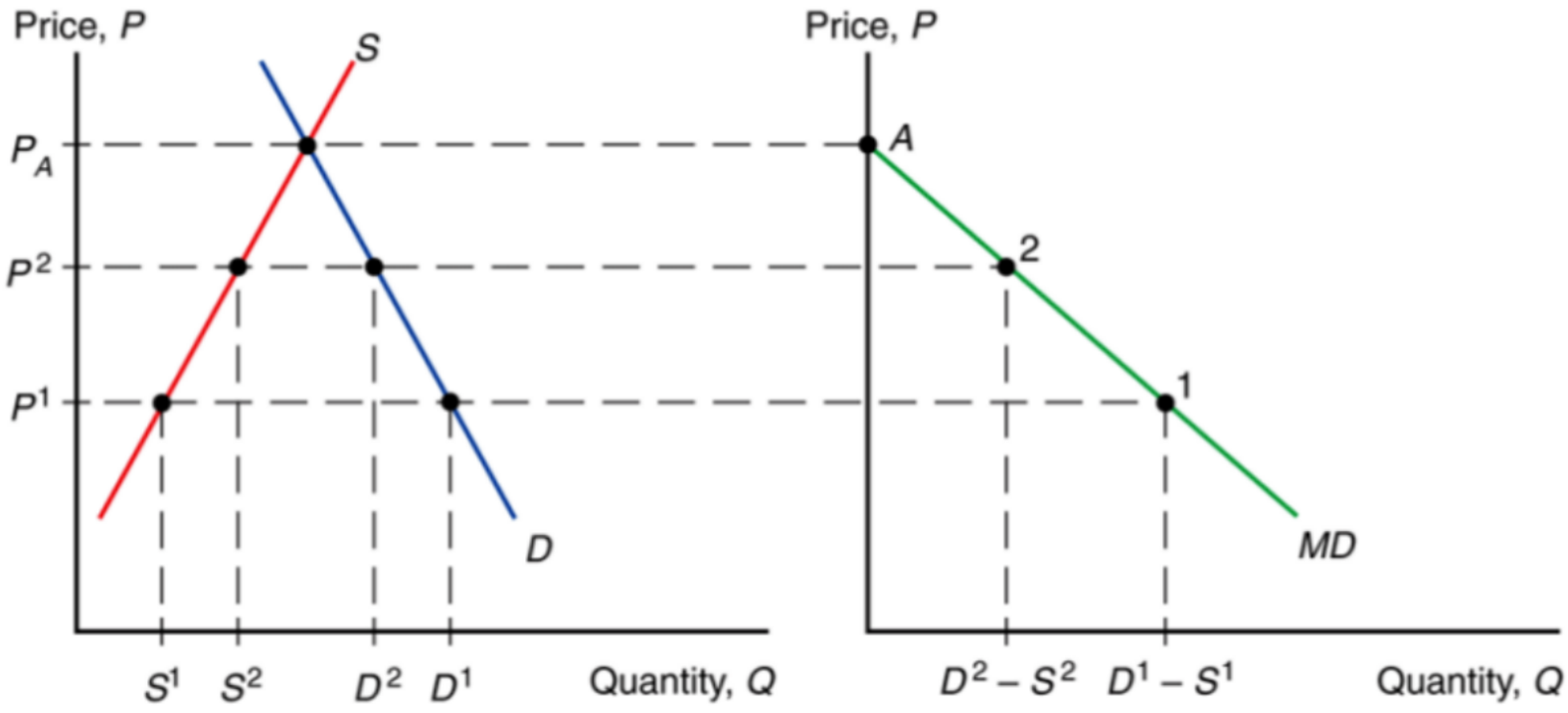
Allowing trade apples will be exported from *Foreign* to *Home* until

$$p = p^*$$

Home import demand and *Foreign* export supply are given by

$$MD = D - S$$
$$XS^* = S^* - D^*$$

Home import demand curve



Foreign export supply

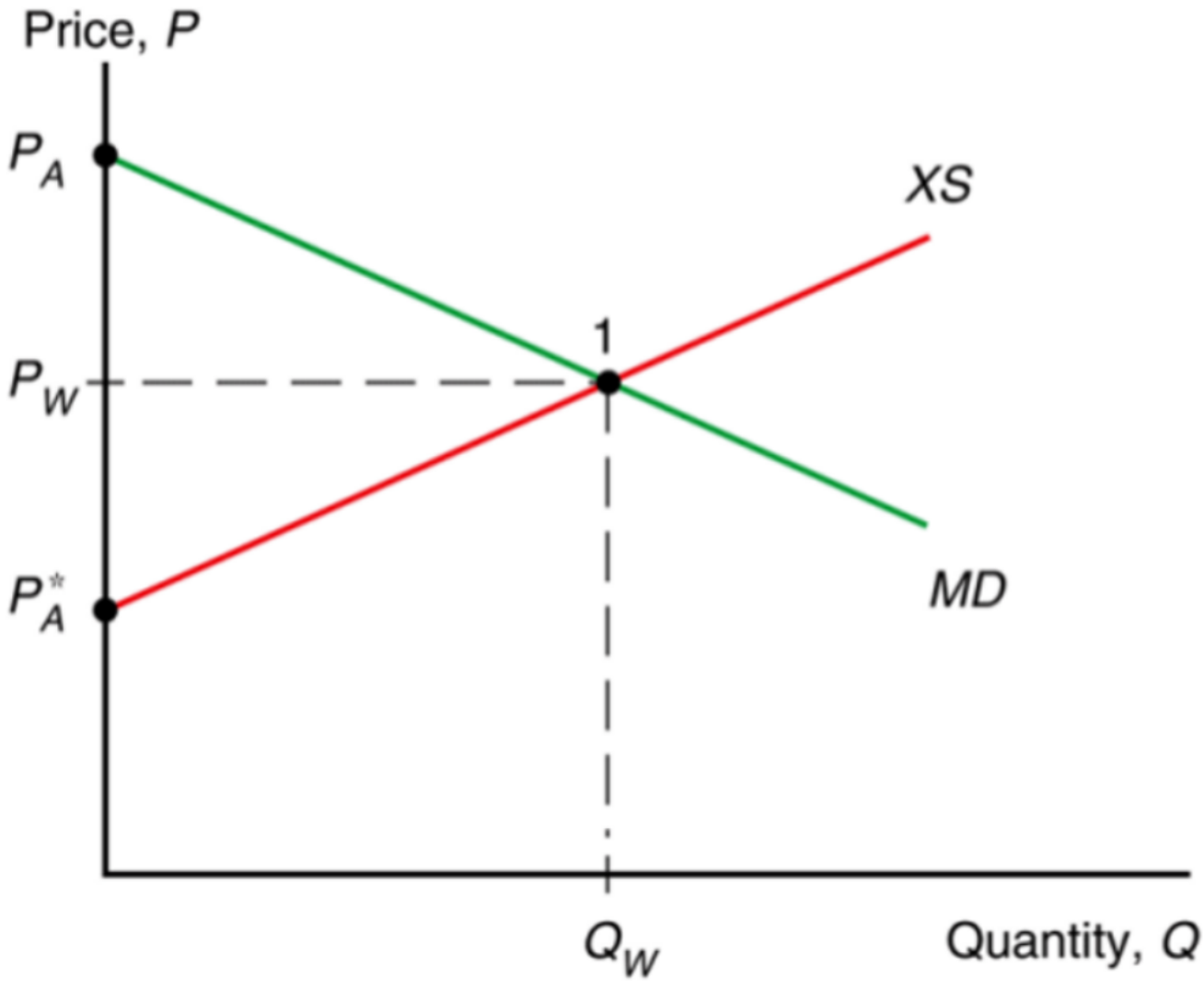
When the world market is in equilibrium we have that import demand equals export supply or

$$D - S = S^* - D^*$$

Which entails that world demand equals world supply

$$D + D^* = S + S^*$$

World equilibrium



Let's assume that for some reason *Home* government decides to implement tariff τ. *Home* producers will export only when

$$p + \tau \leq p^*$$

Whereas they only sell domestically if

$$p + \tau \geq p^*$$

The equilibrium price difference will be the tariff

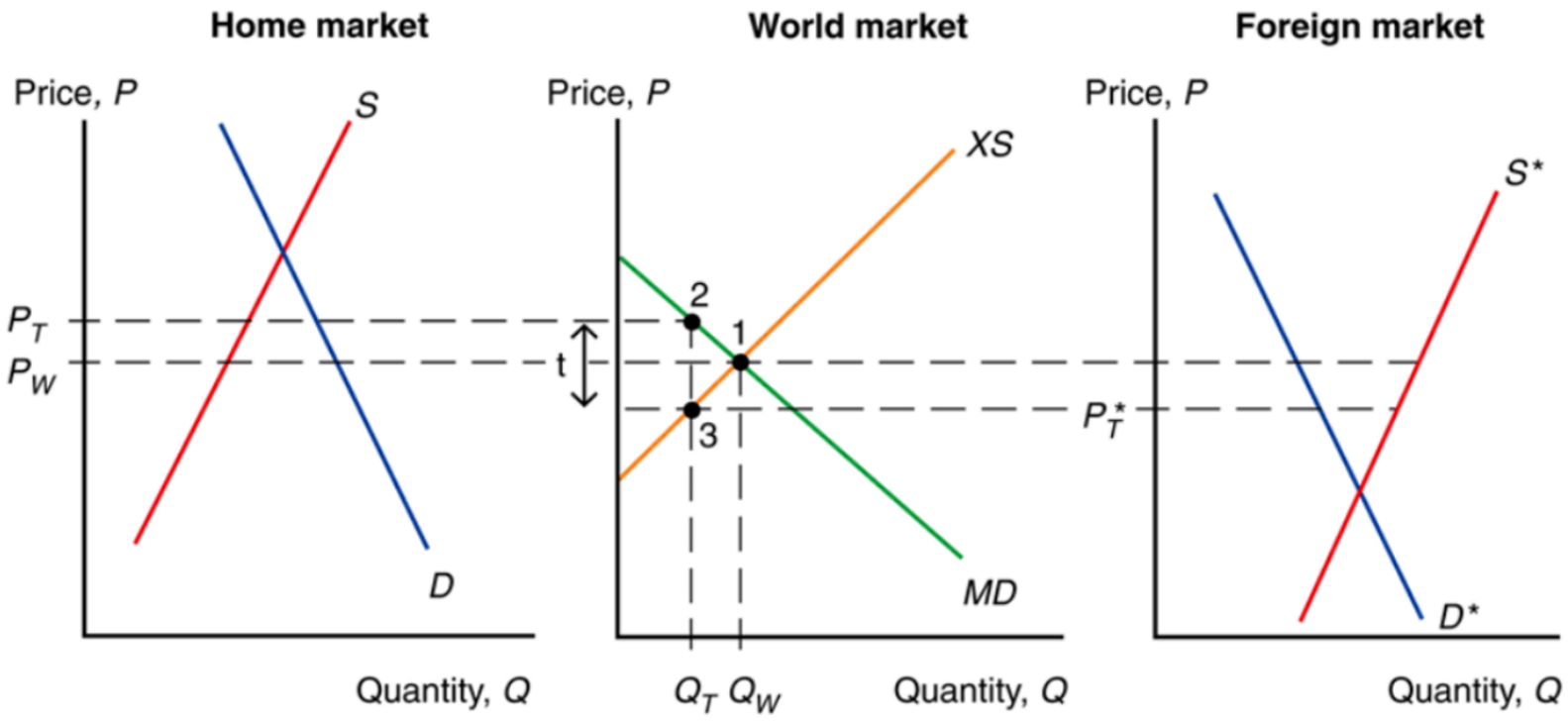
$$p_t - p_t^* = \tau$$

Meaning that the tariff acts as a transportation cost.

After the tariff is set there will be excess demand in *Home* and excess supply in *Foreign*, as a result

1. p will increase and p^* will decrease
2. Both *Home* imports and *Foreign* exports will decrease

Effect of tariff



Due to the tariff the price in *Home* will increase from p_w to p_t and as a result producers will supply more while consumers demand less.

- Import quantity drop from Q_w to Q_t (2)

In *Foreign* the price will drop from p_w to p_t^* which means that producers will supply less and consumers demand more.

- Export quantity decreases from Q_w to Q_t (3)

When $p_t - p_t^* = \tau$ we have $MD = XS^*$

- The increase in p_t can be less than the tariff
- Part of the tariff effect will cause *Foreign* export price to decline, although effect is very small

Of course the economic size of a country imposing a tariff matters. If *Home* is a small country it will have no effect on p^* or p_w.

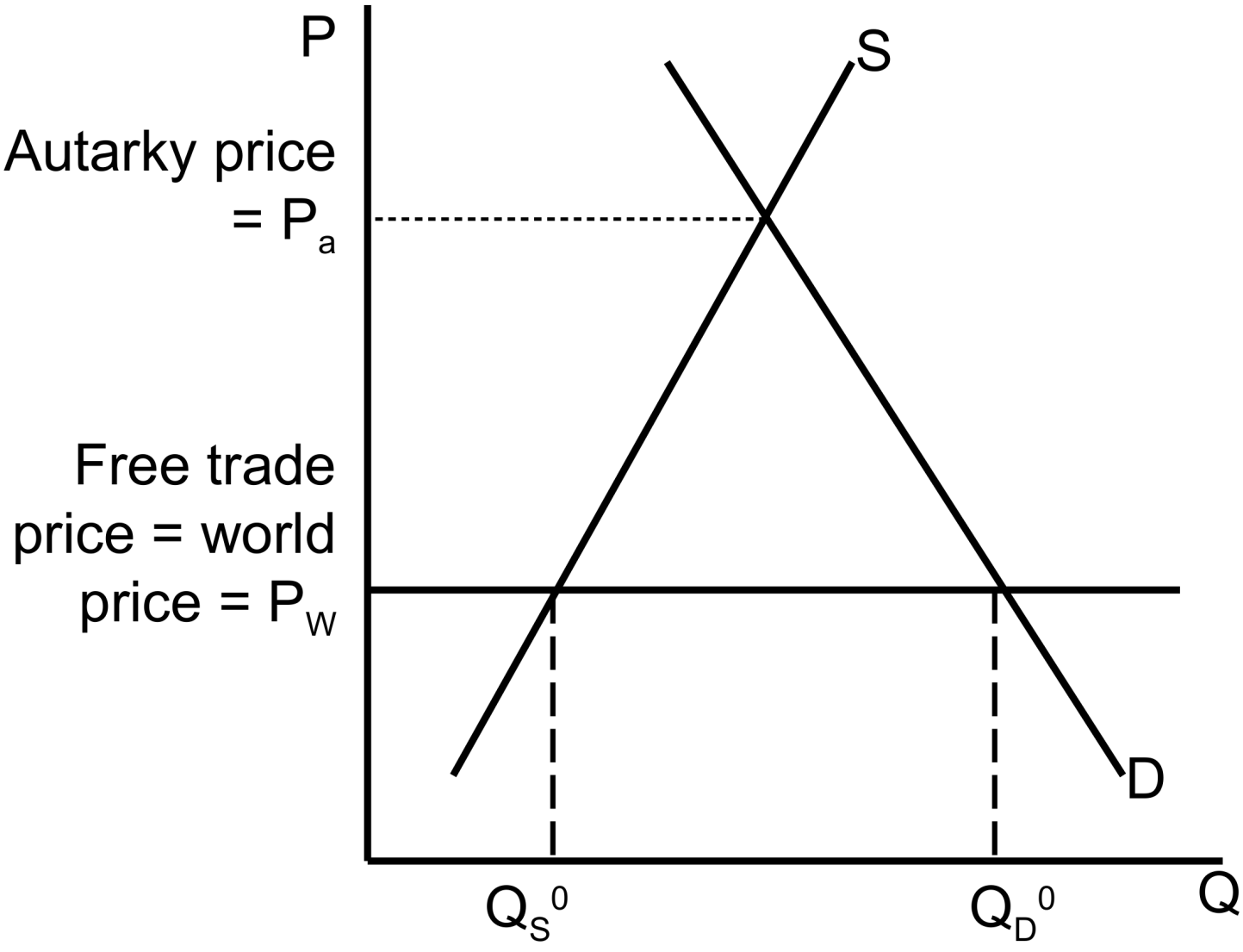
- *Home* demand is an insignificant part of world demand

When $p^* = p_w$ the price in *Home* will increase by the full amount of the tariff

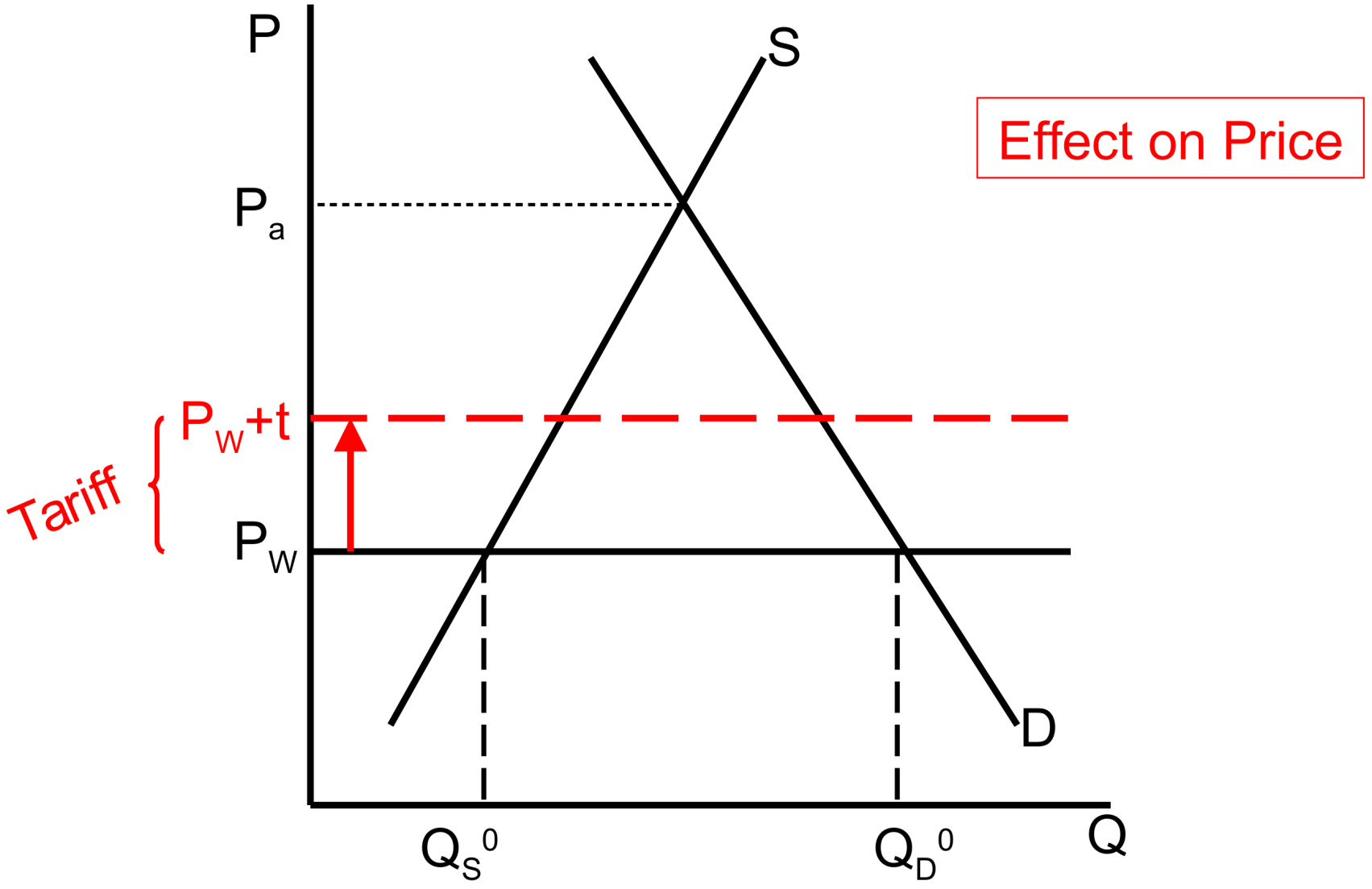
$$p_t = p_w + \tau$$

The price will creep towards the price under autarky.

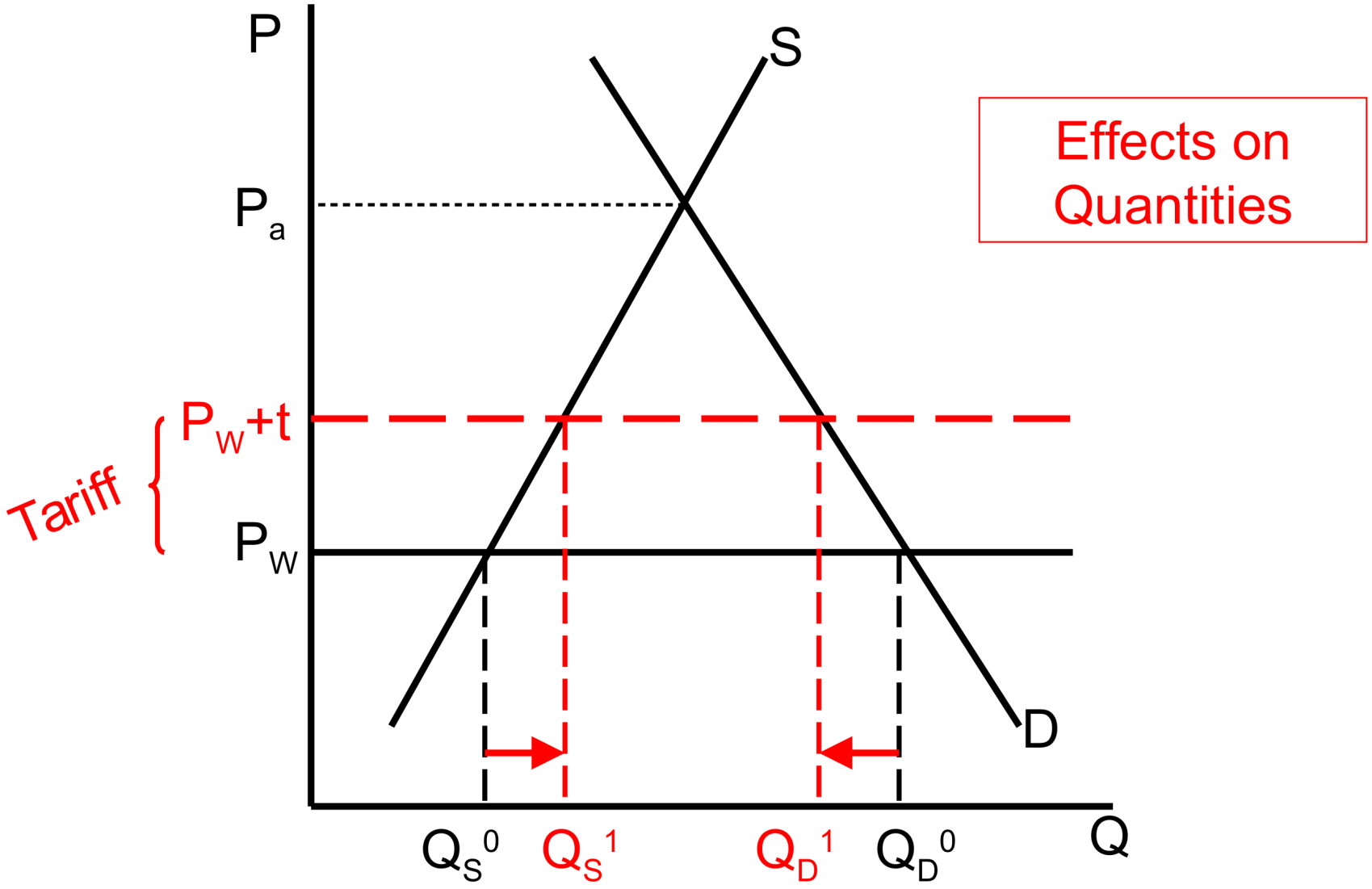
Tariff effect in small country



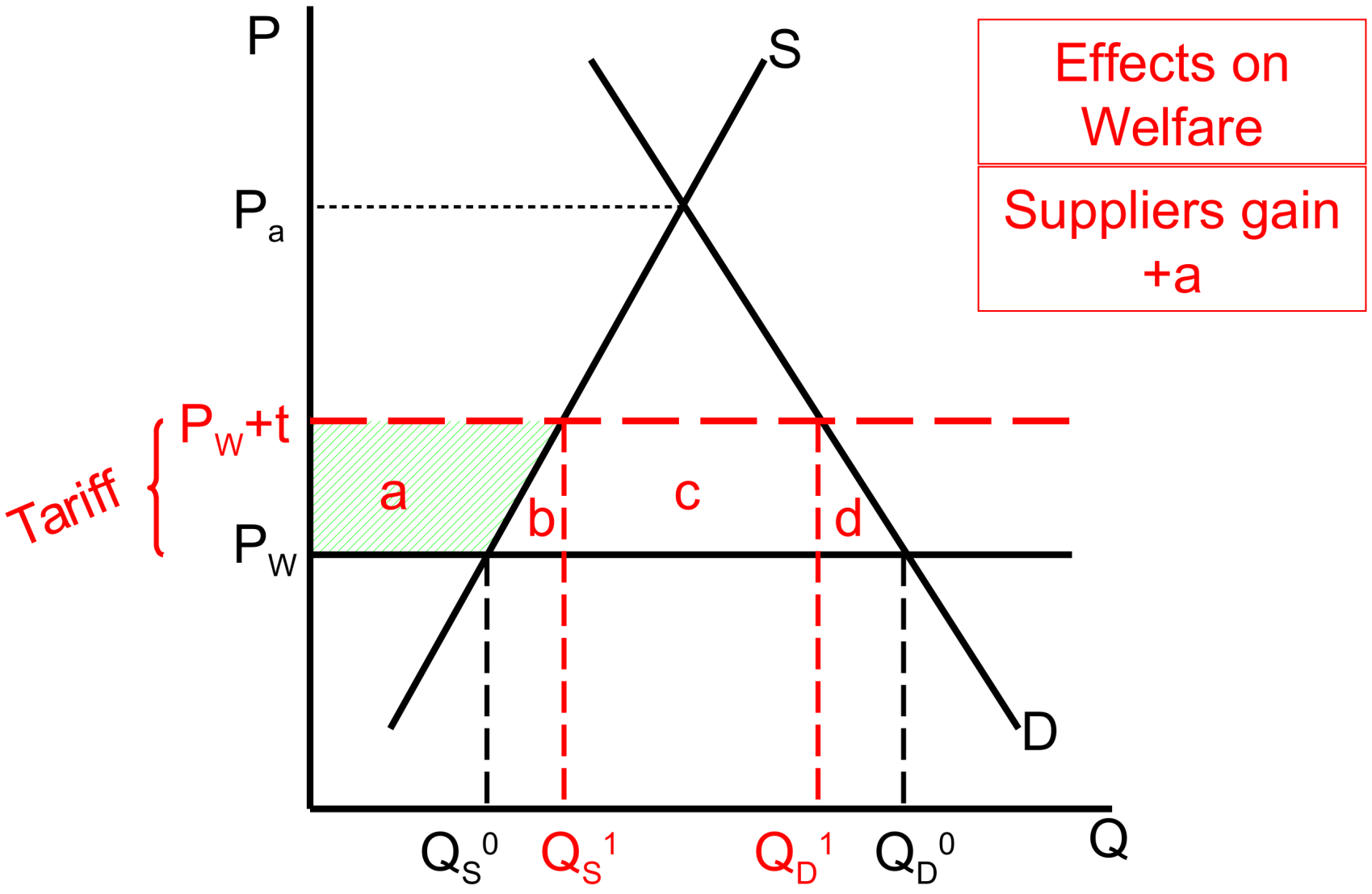
Tariff effect in small country



Tariff effect in small country



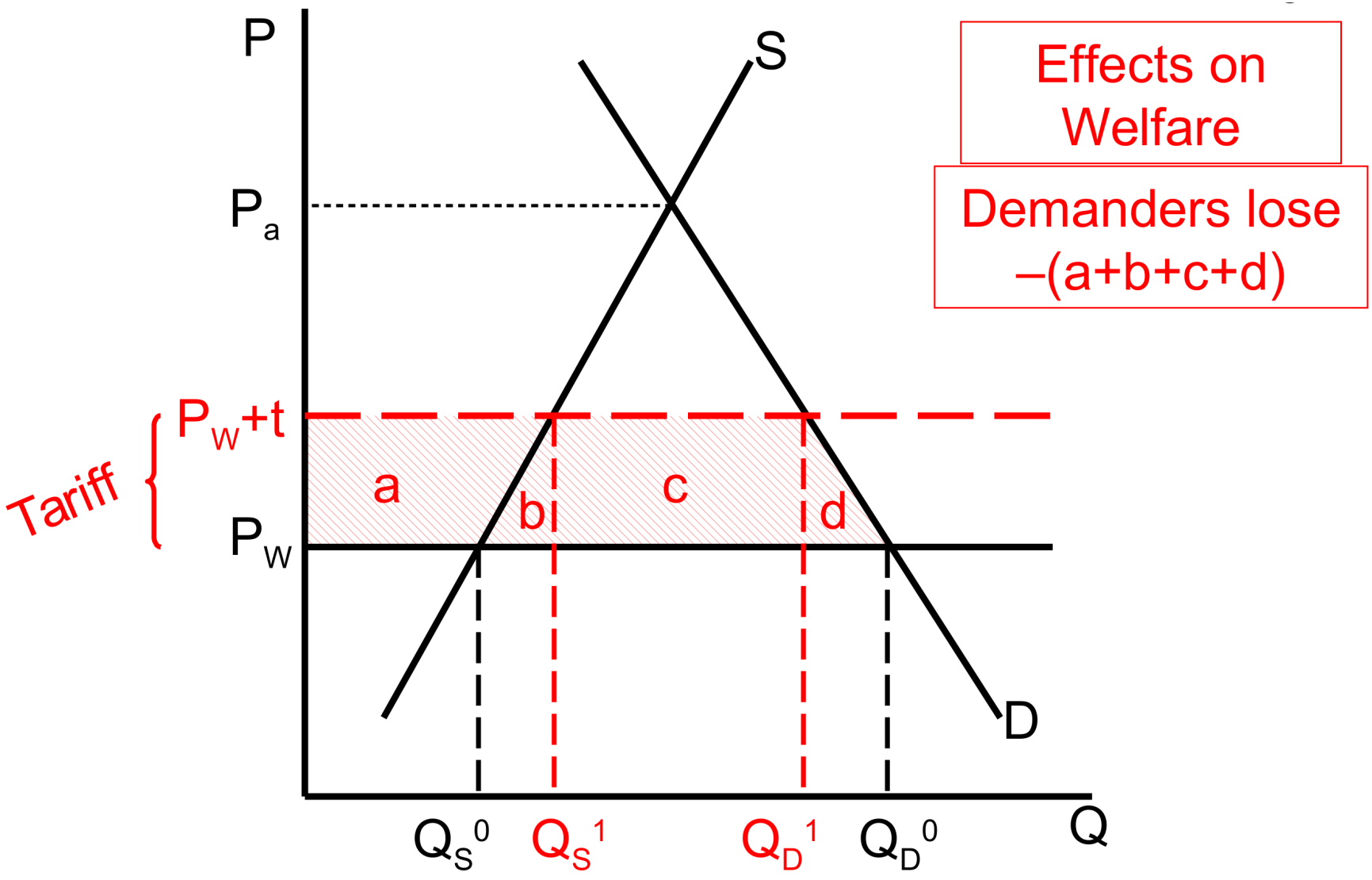
Tariff effect in small country



Effects on Welfare

Suppliers gain +a

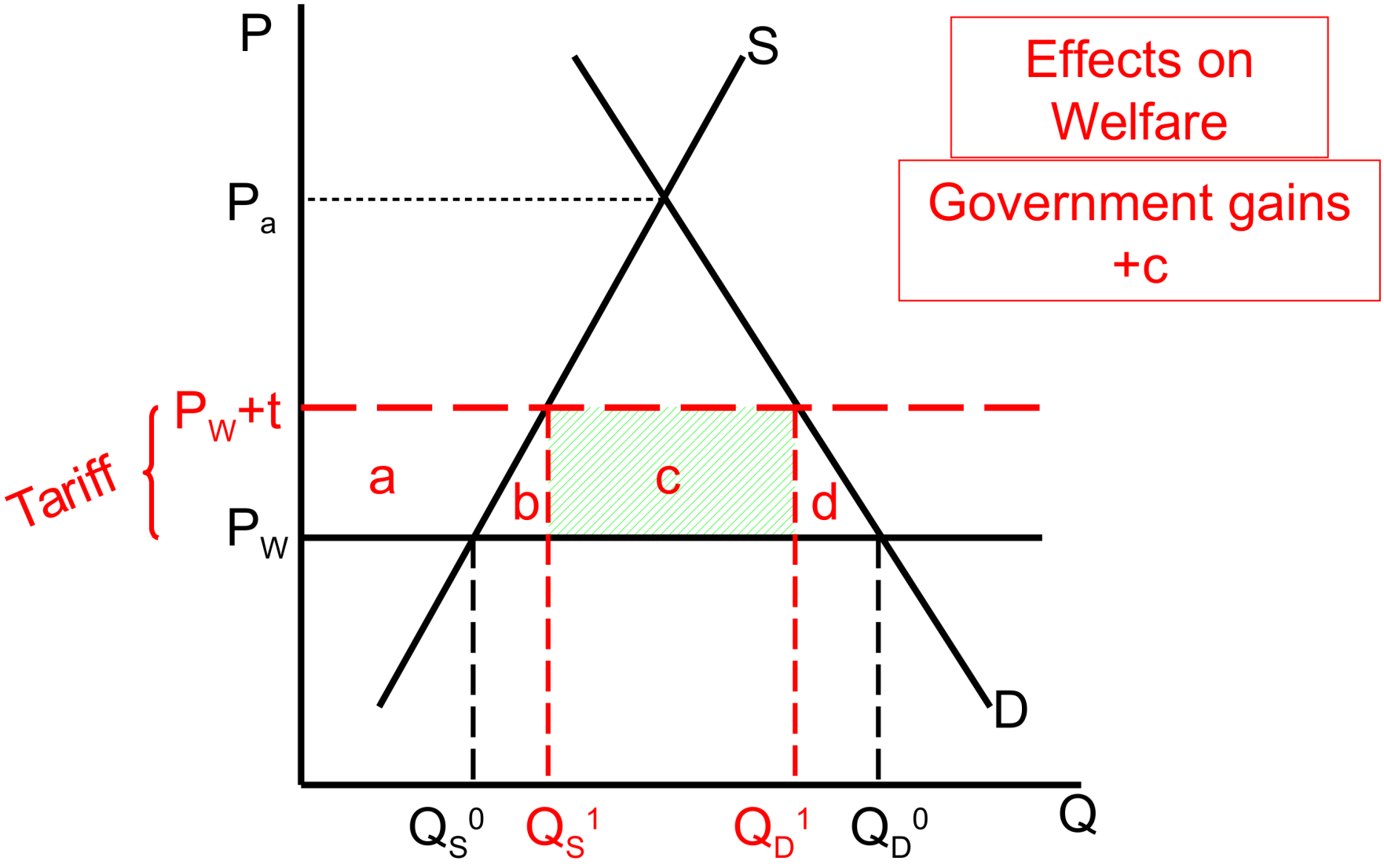
Tariff effect in small country



Effects on Welfare

Demanders lose –(a+b+c+d)

Tariff effect in small country

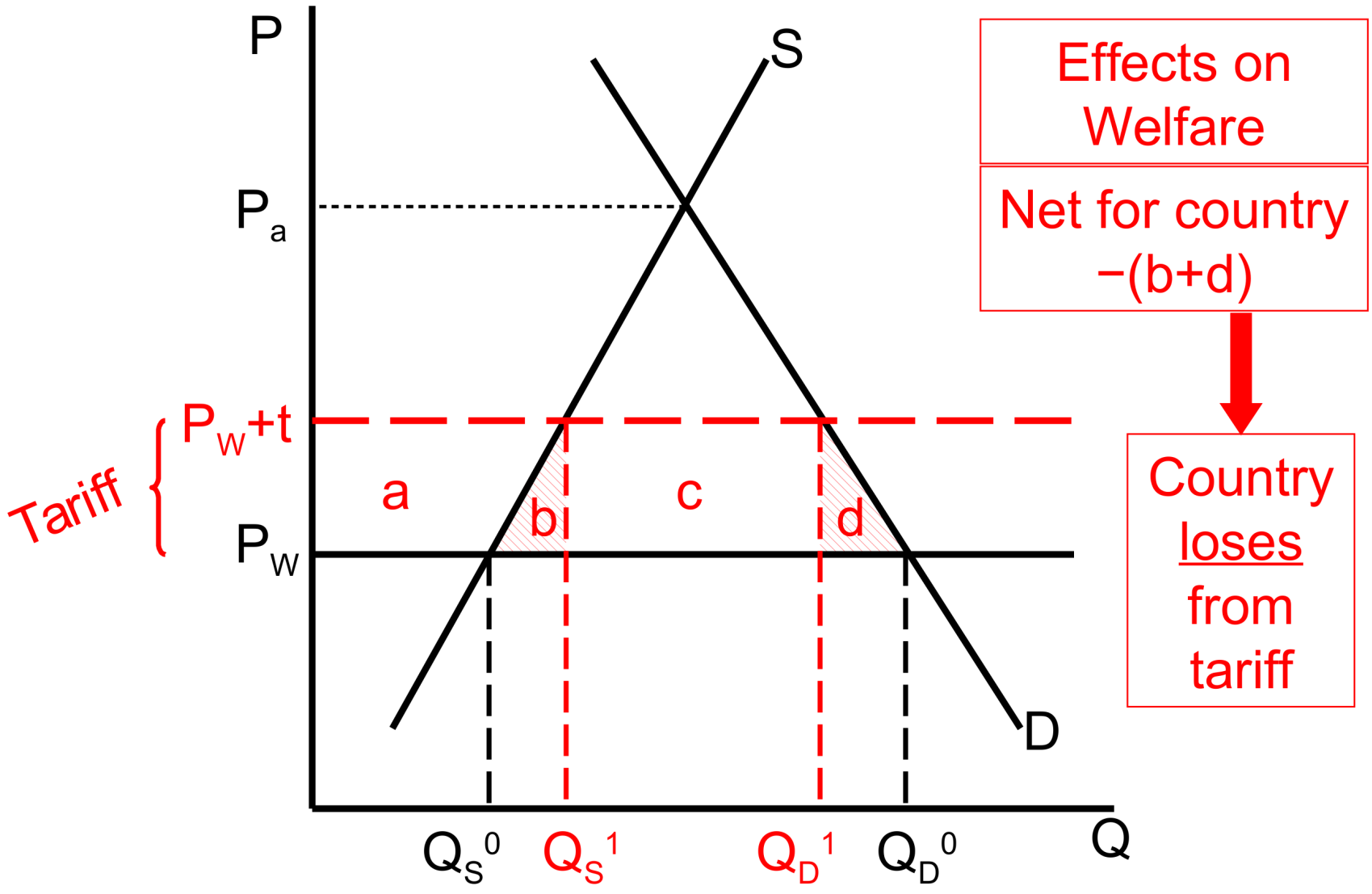


In a small country the effect of a tariff is that there will be fewer imports and more domestic production. Welfare loss will be determined by the

- Production distortion loss
- Consumption distortion loss

Goverment will experience an increase in income due to tariff revenues.

Tariff effect in small country

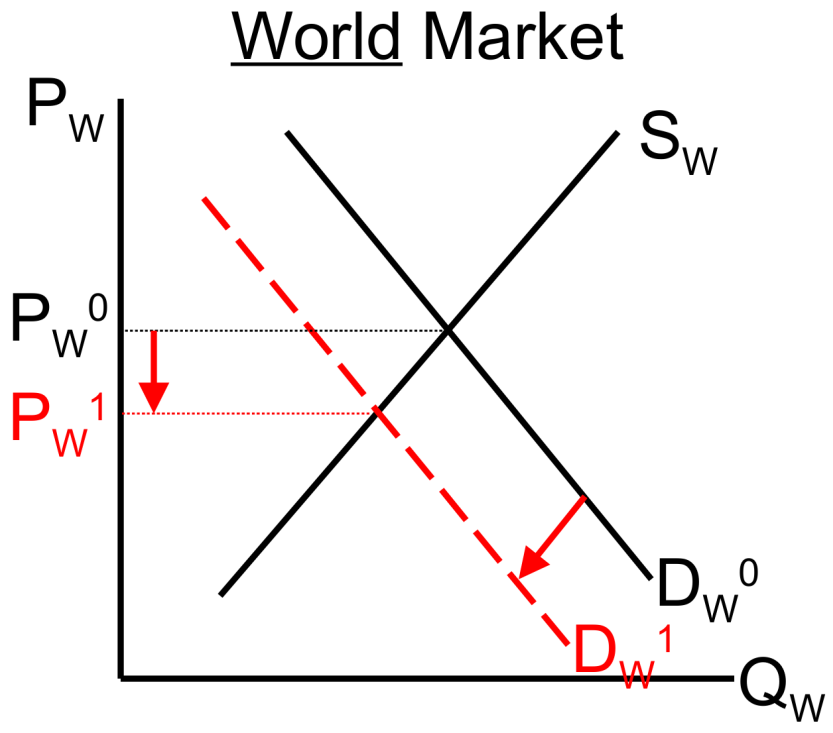


For a large economy imposing a tariff is a way to influence the Terms of Trade, a country can

- Manipulate exports prices relative to imports
- Increase national income at expense of trading partners

The reduction in imports will lead to a lower world price. Imposing a tariff will improve welfare as long as the ToT gains outweigh the distortion loss.

- A critical assumption is that there is no retaliation leading to a trade war


World Market
P_W
S_W
P_W^0
P_W^1
D_W^0
D_W^1
Q_W

Recall, Terms of Trade are calculated as

$$ToT = \frac{p_x}{p_m}$$

When the ToT increases welfare improves as the country can get more import in return for exports

- Large country can drive down world price of imports, improving ToT

The possible gains from trade is sometimes also called the monopoly effect

- Monopolies increase profit by selling less at higher prices

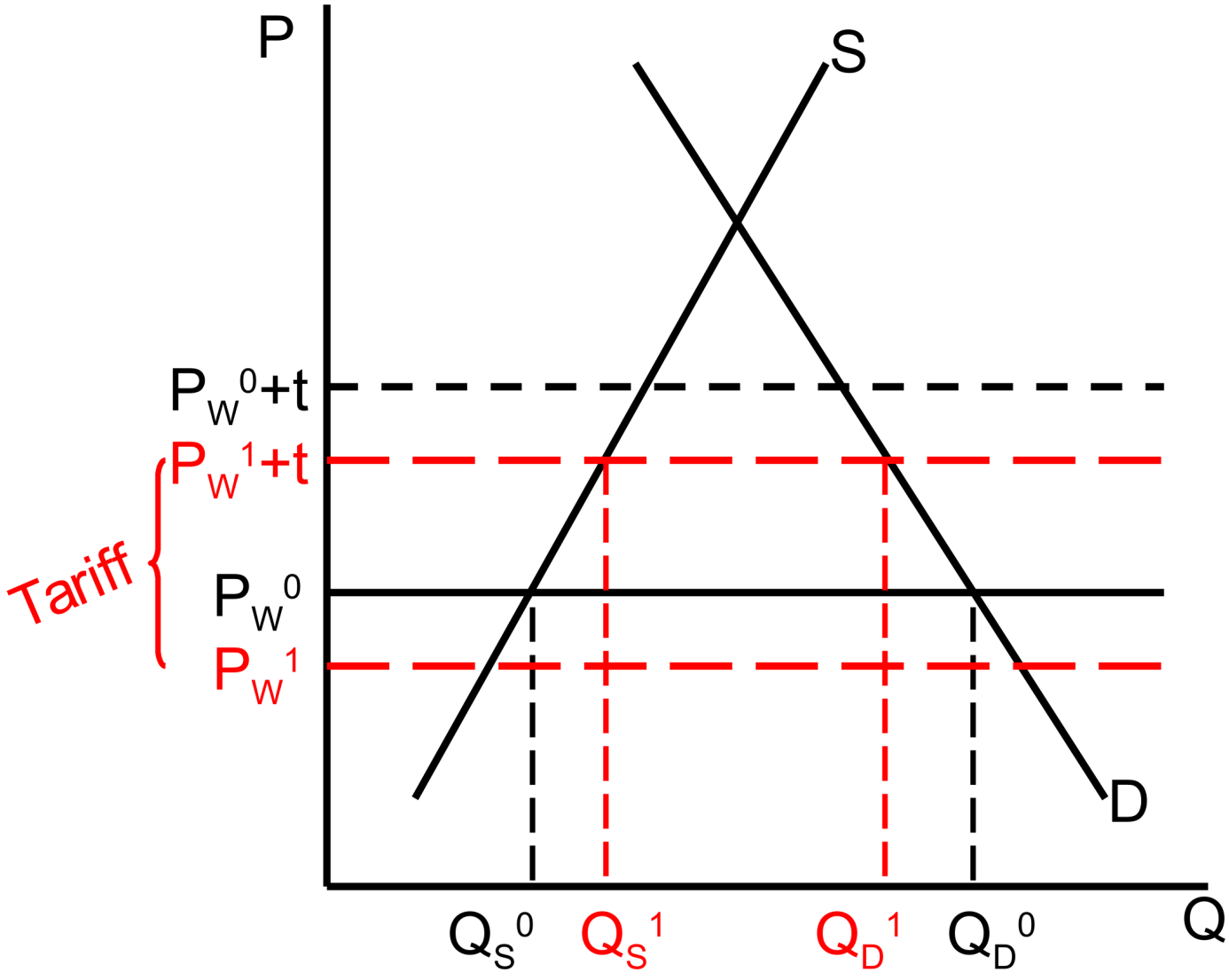
A large country can increase welfare by

- Importing less, using a tariff, thereby reducing the price it pays

A large country can also gain by restricting exports

- e.g. OPEC and oil exports at times

Tariff effect in large country

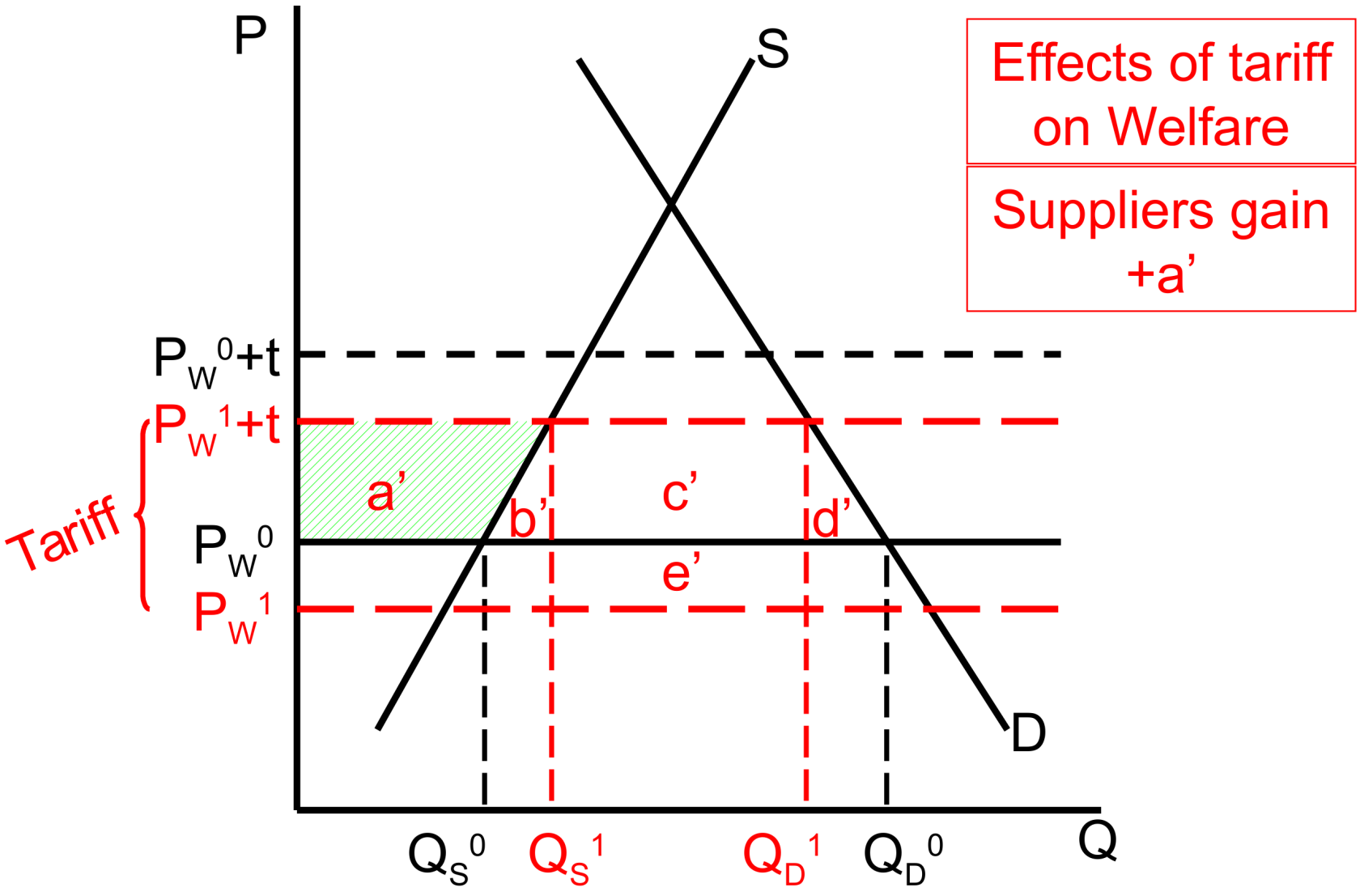


As a result of implementing the tariff AND the subsequent fall in world prices the domestic price will increase, but in comparison to a small economy

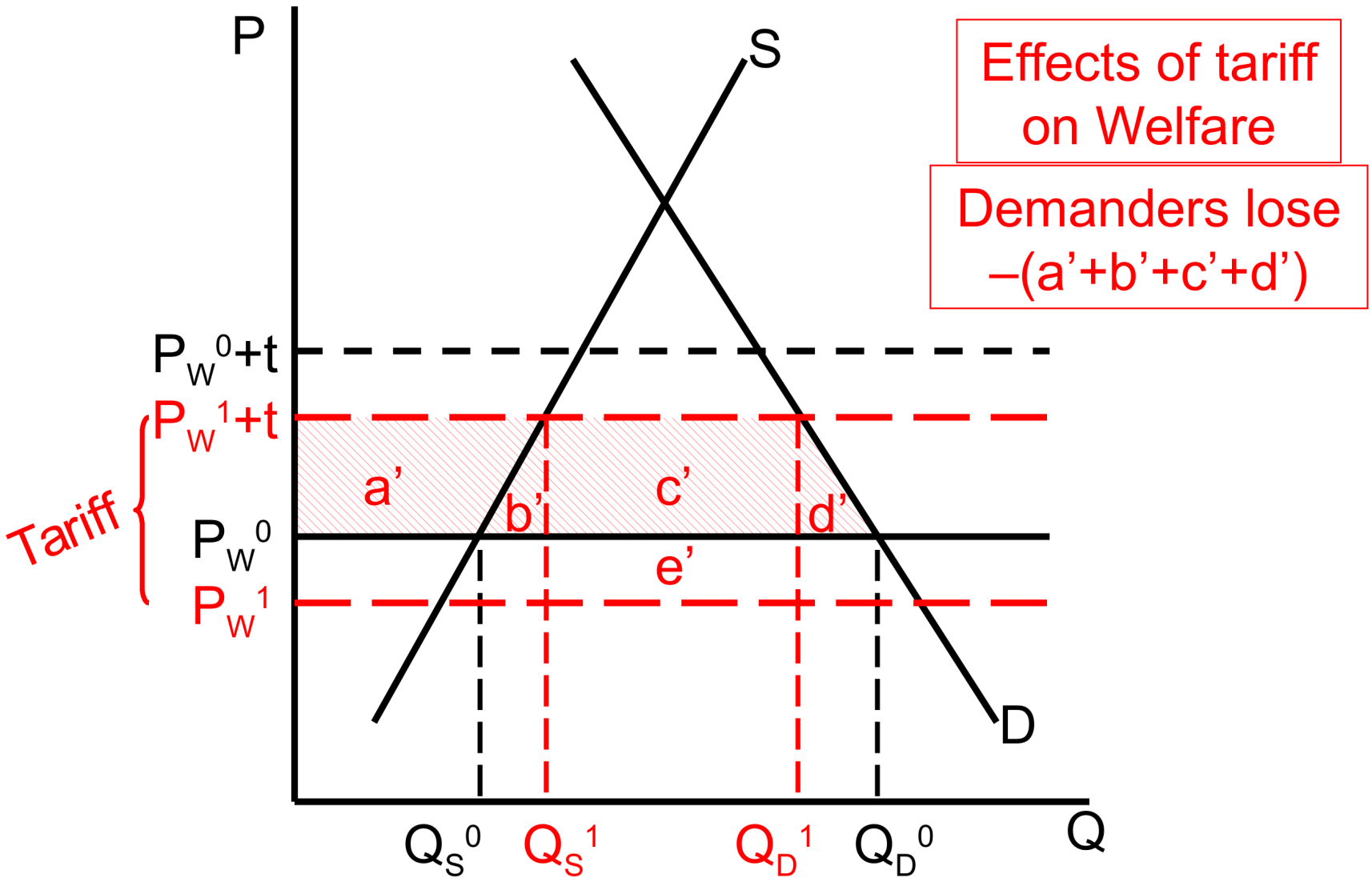
1. Output will increase by less, making the producer surplus smaller
2. Reduction in consumption is lower which means that consumer loss is smaller as well

Since imports fall by less as well the tariff revenue is larger.

Tariff effect in large country



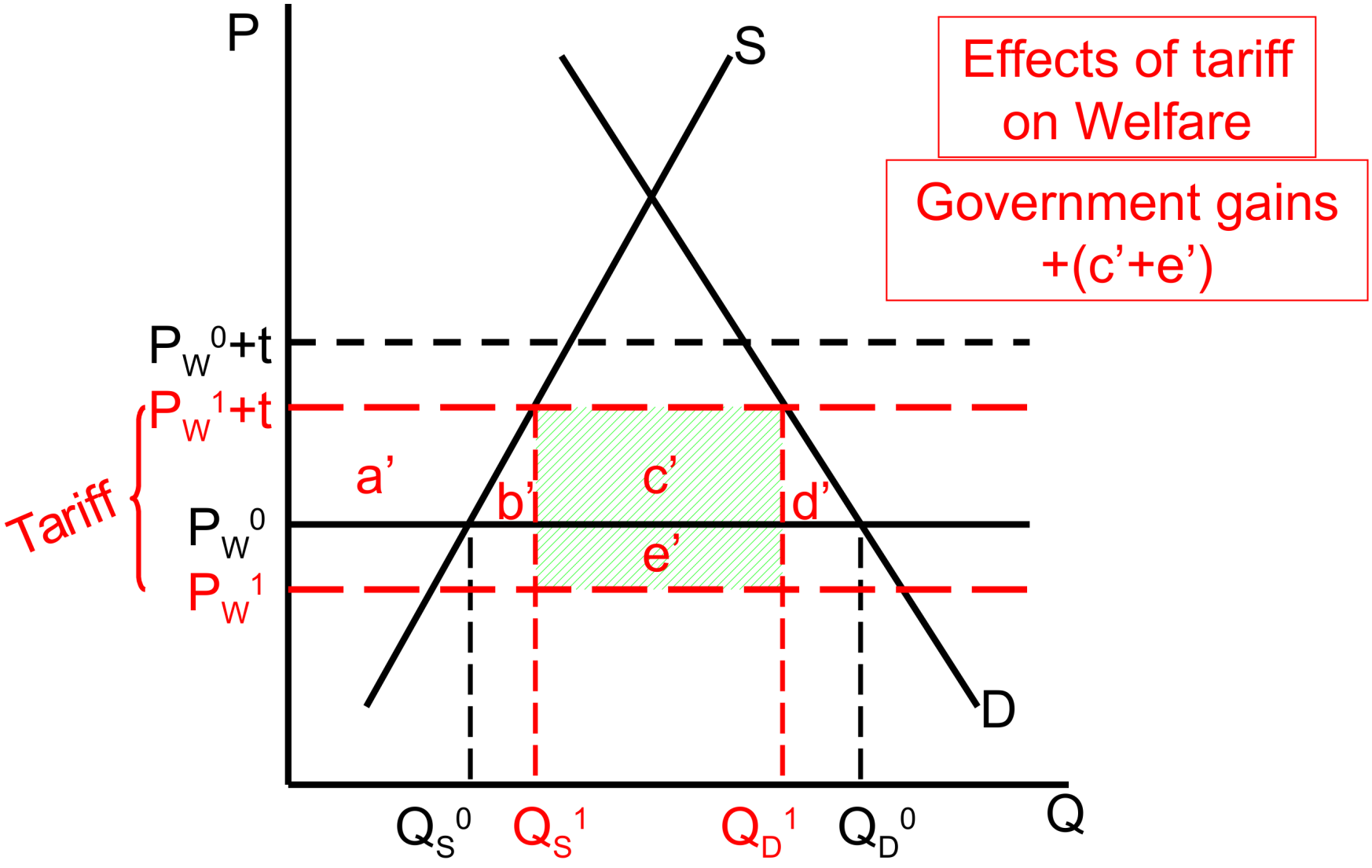
Tariff effect in large country



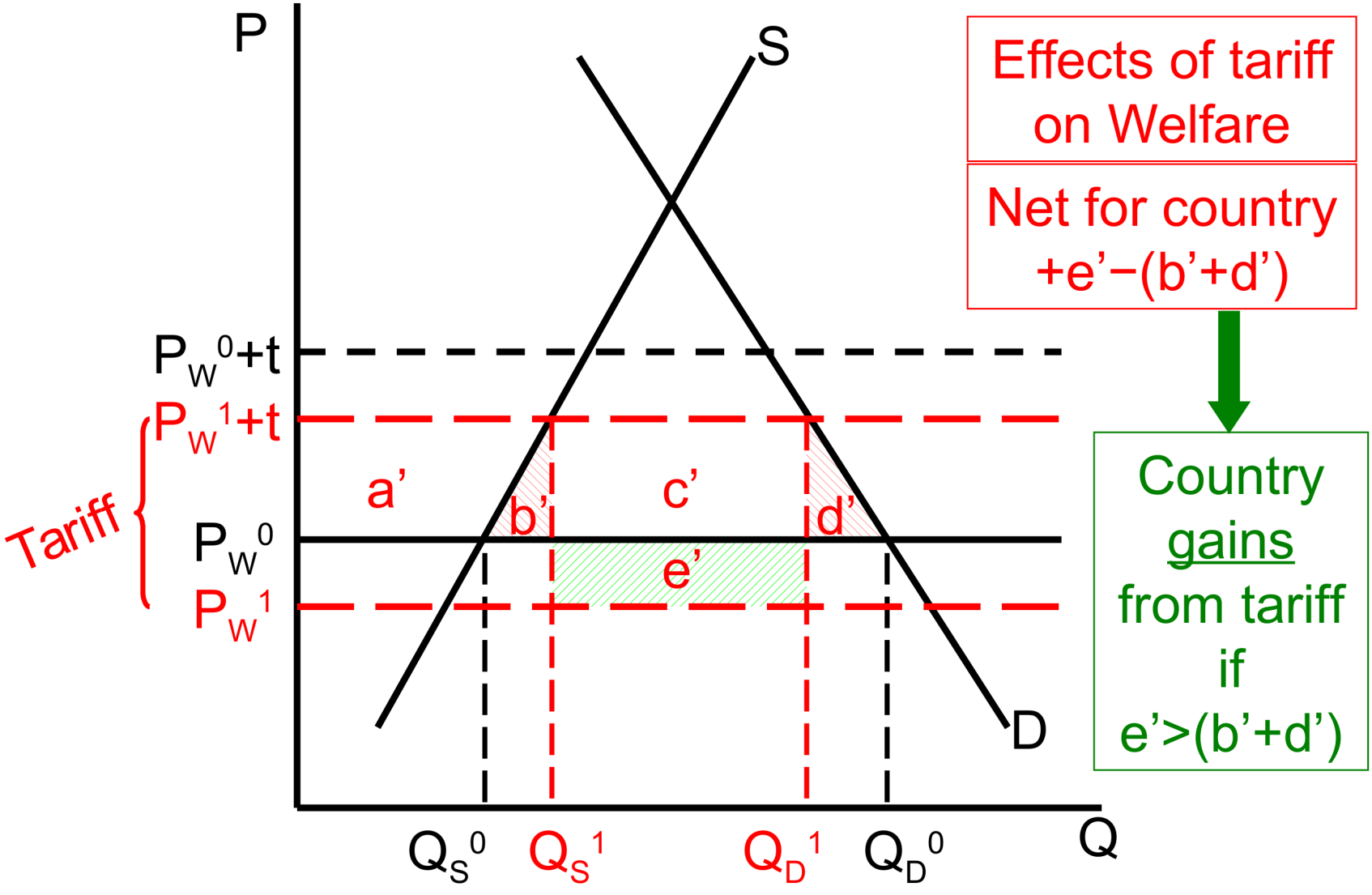
Effects of tariff on Welfare

Demanders lose –(a'+b'+c'+d')

Tariff effect in large country

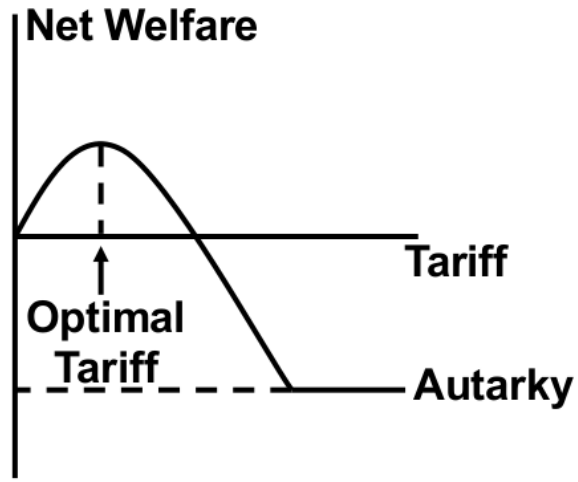


Tariff effect in large country



For a large country there is such thing as an optimal tariff

- If the tariff is too large it will lose



Although a large economy could gain imposing a tariff it will

- Harm the other countries
- Reduce world welfare as the rest of the world losses will be larger than the country's gains

And of course there is the possibility that other countries retaliate with their own tariffs making everyone worse off.

Examining the effect of a tariff we can look at the Effective Rate of Protection (EPR). There is often a difference between the set tariff rate and the effective rate of protection since

- Tariffs will affect sectors other than the protected sector
- Tariffs causes indirect effects on the prices and value added for the protected sector

The EPR accounts for the effect of tariffs on the inputs and outputs and provides a level of protection in a certain industry.

$$EPR = \frac{t_o - at_i}{1 - a}$$

Here t_o is the ad valorem tariff on output and t_i the ad valorem tariff on input. a is the share of input value relative to output value.

Suppose that the world market price for a bicycle is €800 while the inputs cost €600

- This means that the value added equals €200

Now to protect its infant industry a country decides to charge a 25% tariff on imported bicycles

- This means that home producers can now charge €1000 for their bicycles

The effective rate of protection for home bicycle producers is the change in value added or

$$\frac{400 - 200}{200} = 100\%$$

Which is greater than the tariff rate

Now instead of a tariff on bicycles the country imposes a 10% tariff on bicycle parts instead, in order to encourage domestic production. As a result input costs increase from €600 to €660.

This policy is less advantageous to bicycle assembly or home production of bicycles[1]

- Before: local assembly was worth €200
- After: local assembly is worth €140

The new tariff only protects producers of bicycle parts, but not bicycle producers:

$$\frac{140 - 200}{200} = -30\%$$

[1] Assuming price final product doesn't change!

Besides tariffs there are other policy tools known as Non-Tariff Barriers (NTBs). An NTB is

> *Any institutional or policy arrangement that interferes with trade AND is not a tariff.*

Term is also used for policies that expand trade.

Main types of NTB are

1. Import quotas
2. Export subsidies
3. Voluntary export restraints (VER)
4. Embargo
5. Indirect tariff measures, e.g. health and safety standards

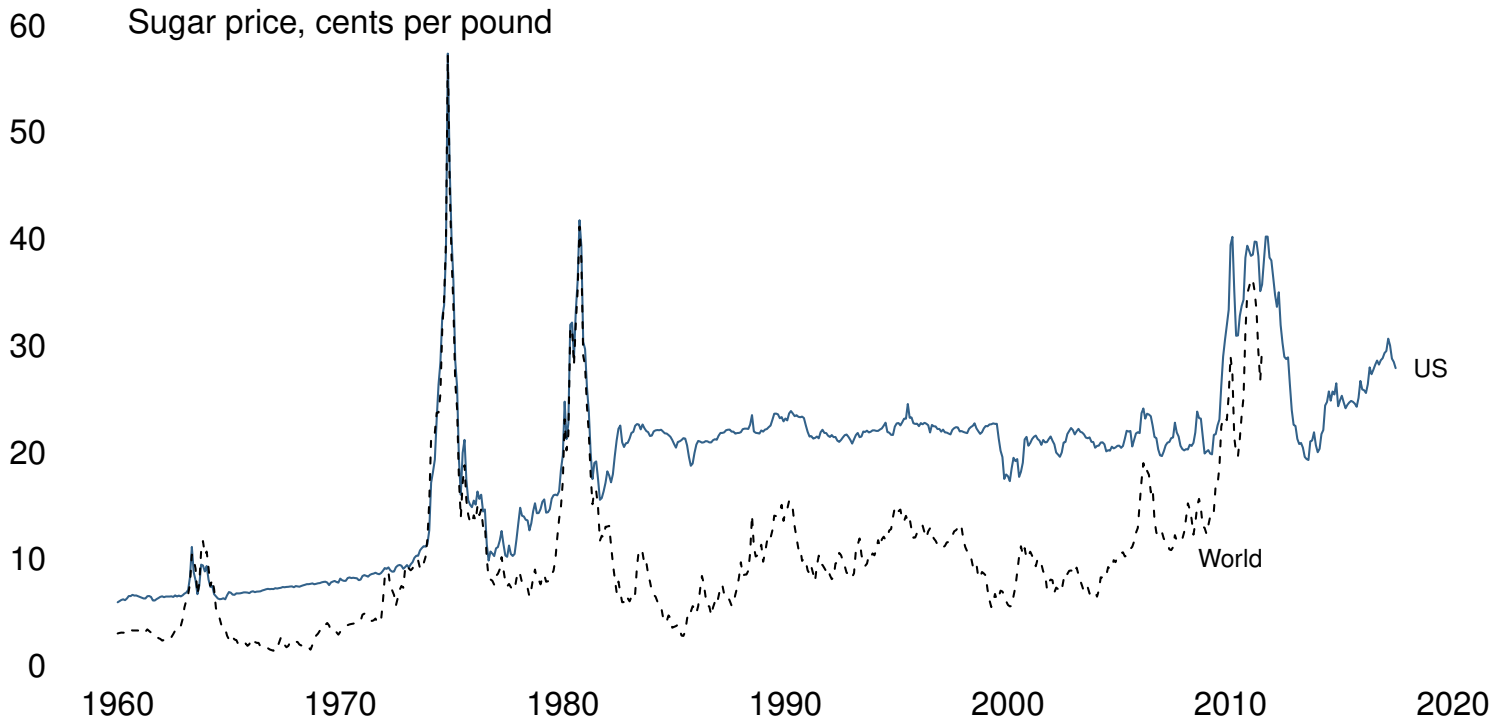
Compared to tariffs these are all worse options given that there is no increase in government revenue associated with them.

An import quota restricts the quantity of a particular good that may be imported and is enforced by

- Licences
- Quota rights

A binding import quota will increase import prices because the quantity demanded will exceed the quantity supplied both by domestic producers and imports.

US domestic and world sugar prices



The USA guarantees domestic sugar producers a break-even price

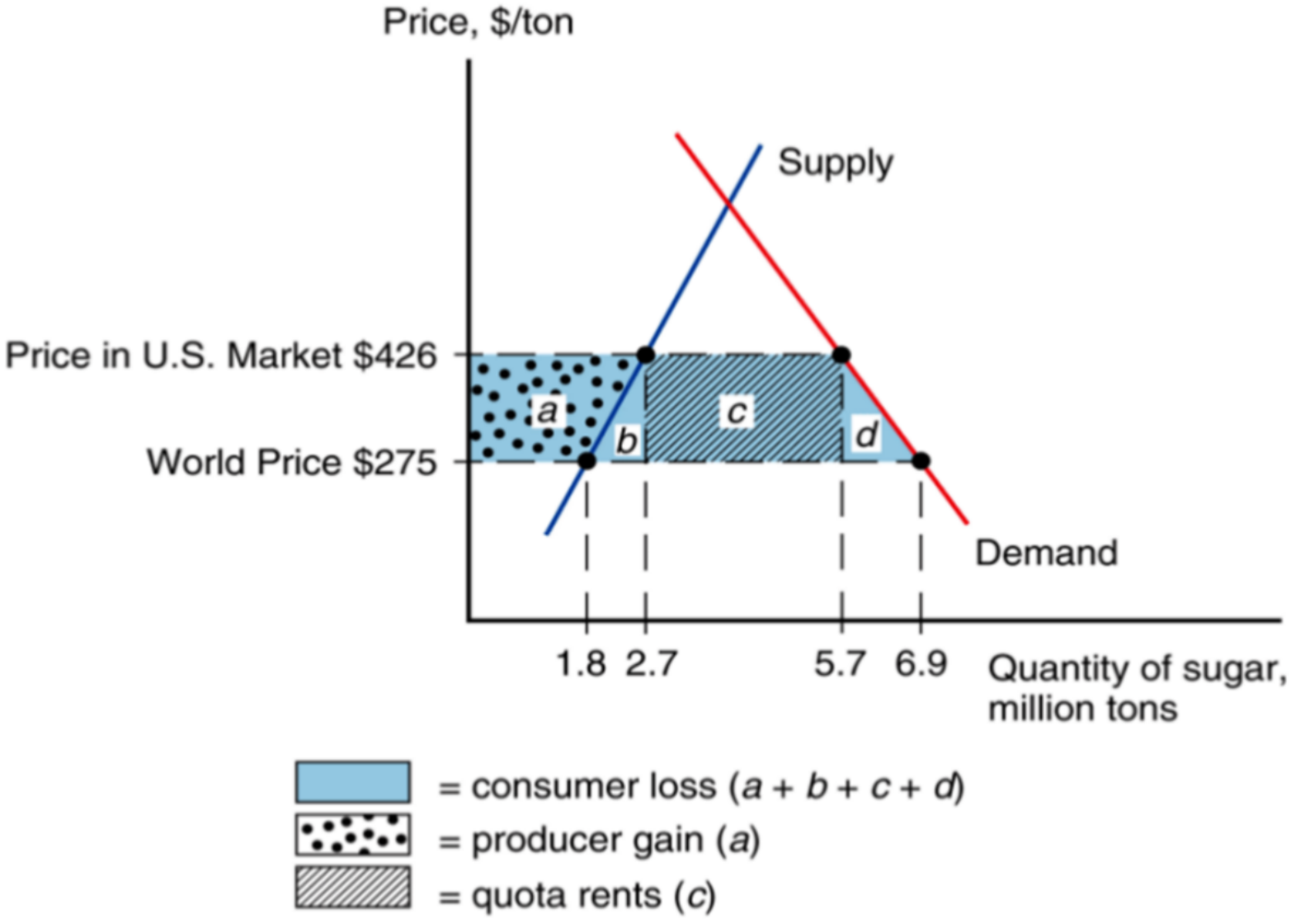
- Meaning that the USDA will buy any amount of sugar at this price

Even with this break-even price the domestic production is not enough to satisfy demand, which means that they have to import from the world market, which they do imposing import quotas

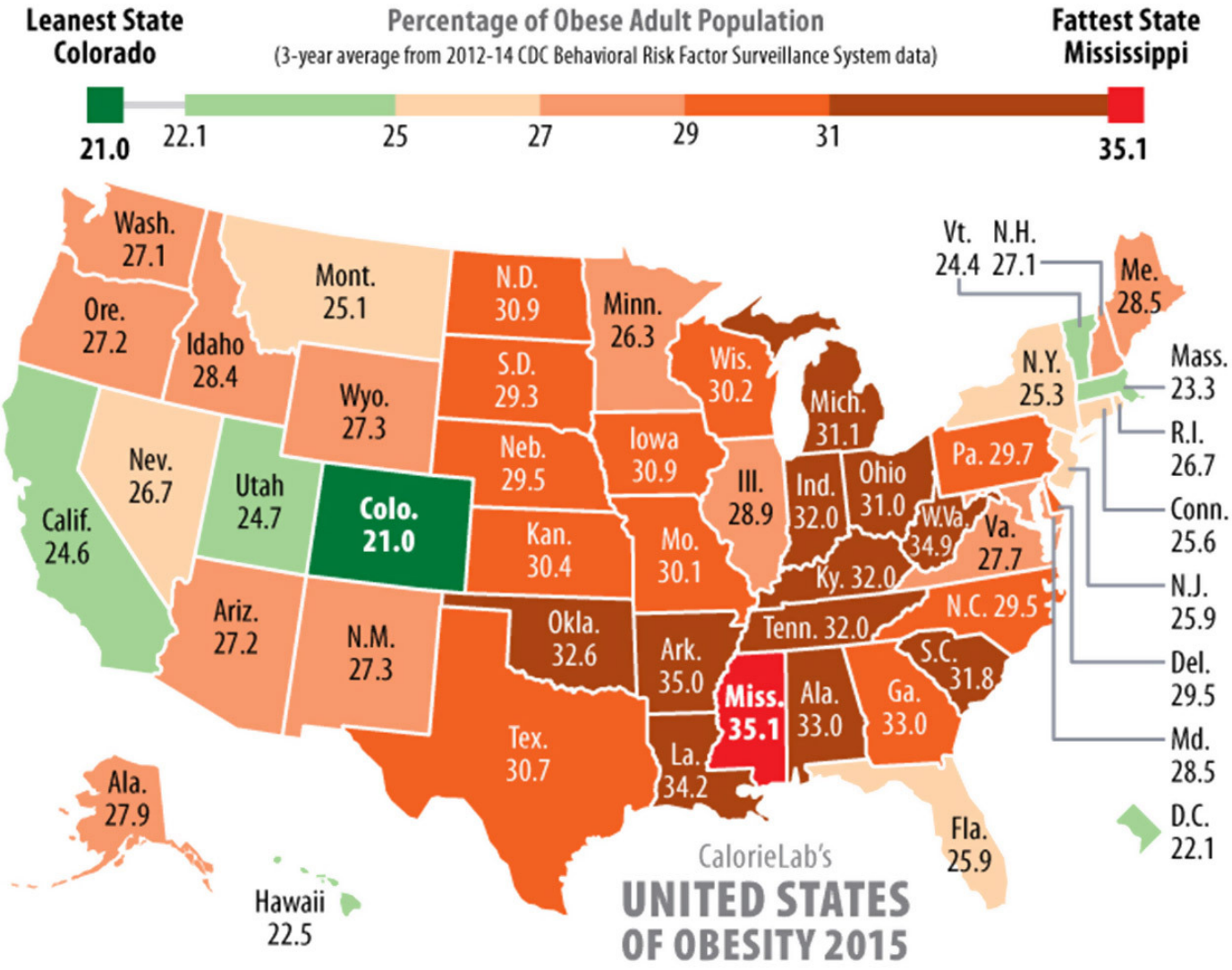
- They let foreign governments administer the quota and retain the quota rents
- Quota equals 1.4m tonnes annually

As a result of this trade policy the price of sugar has been about twice as large as the world market price.

Effect of US sugar import quota

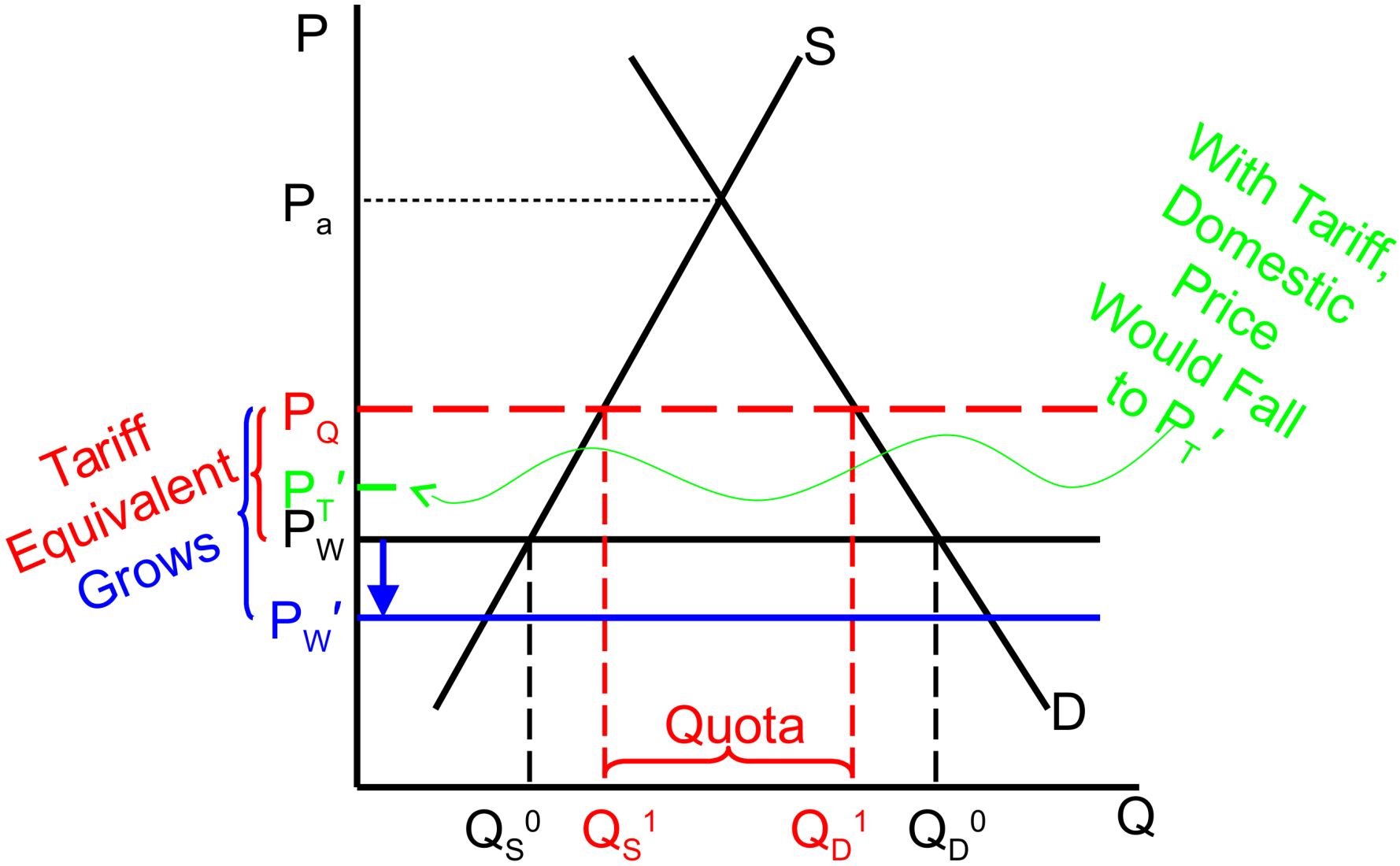


US obesity prevalence



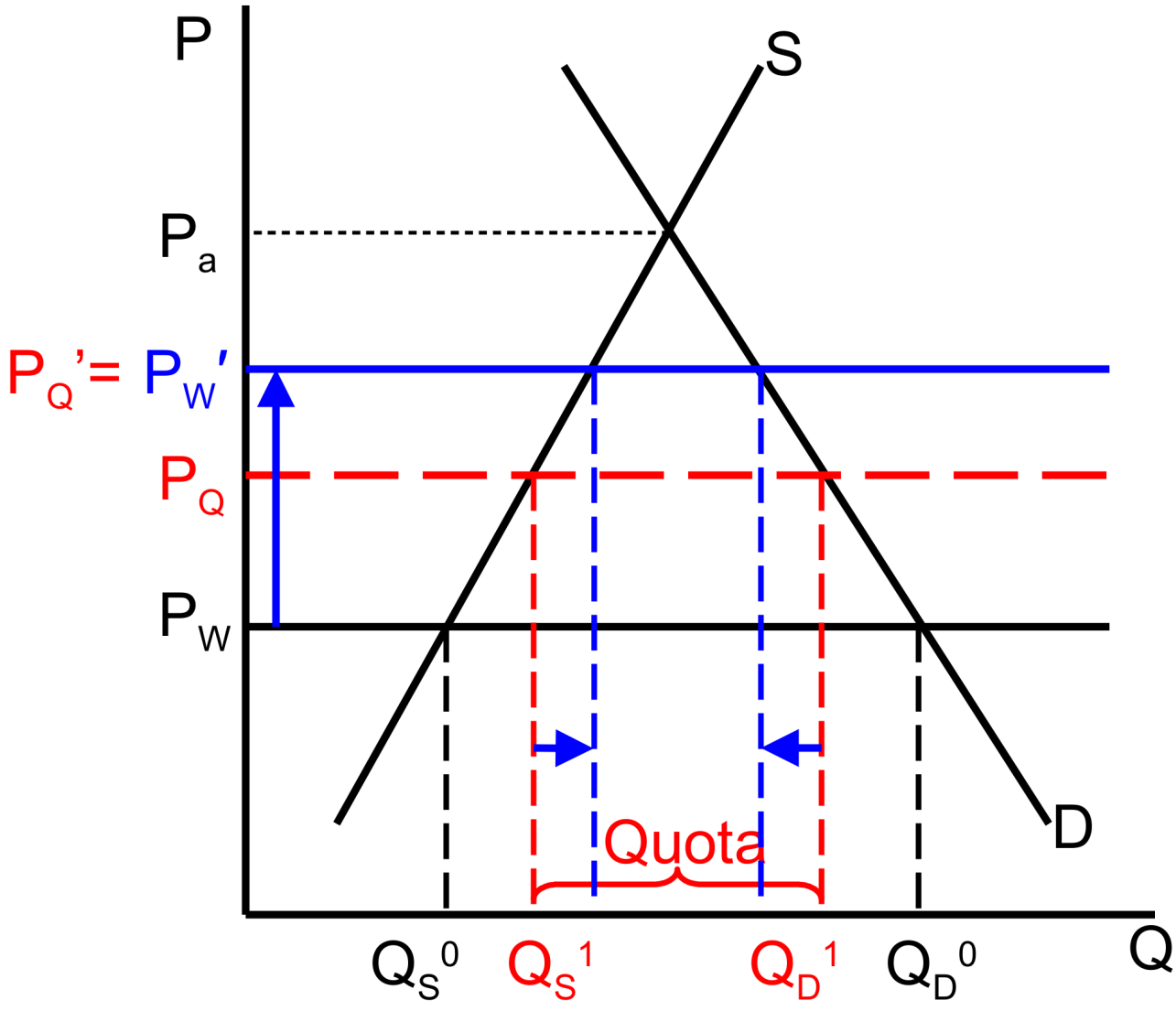
Unlike a tariff a quota becomes more restrictive when

- Foreign supply increases
- World prices drop


P
S
P_a
With Tariff, Domestic Price Would Fall to P_T'
P_Q
Tariff Equivalent Grows
P_T'
P_W
P_W'
D
Quota
Q_S^0
Q_S^1
Q_D^1
Q_D^0
Q

Following a decrease in world prices the tariff equivalent of the quote increases as well as the quote rents. What doesn't change are

- Domestic price
- Domestic production and consumption
- Imports


P
S
P_a
$P_Q' = P_W'$
P_Q
P_W
D
Quota
Q_S^0
Q_S^1
Q_D^1
Q_D^0
Q

If prices increase the reverse will happen, if the increase is small, but for a large enough increase

- The quota is no longer binding and tariff equivalent becomes zero
- Domestic price will become world price

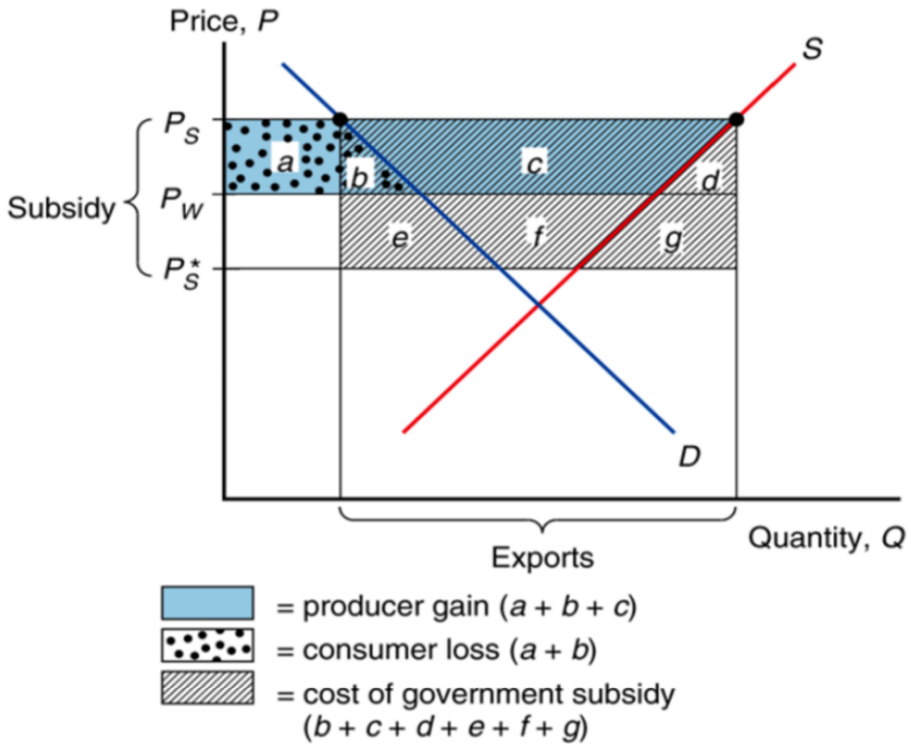
This is what happened to the US sugar price.

Importantly, quota rents go to the license holder. Who holds the license? That depends on how it is administered

1. Auction licenses
2. Distribute on first-come, first-served basis
3. Give away to domestic firm
4. Give away to foreign firm/government

Often licenses are distributed following approach 4 based on historical exports.

Like tariffs export subsidies can be ad valorem or specific. But they are the exact opposite of tariffs as the government pays producers to export



An export subsidy will increase the price in an exporting country

- Consumer surplus decreases, producer surplus increases

While government revenues will decrease

- Due to paying sX^*

Consumers in importing countries will benefit since they will pay

$$p^* = p_s - s$$

In contrast with a tariff the ToT will be worsened by export subsidies by lowering world market export prices.

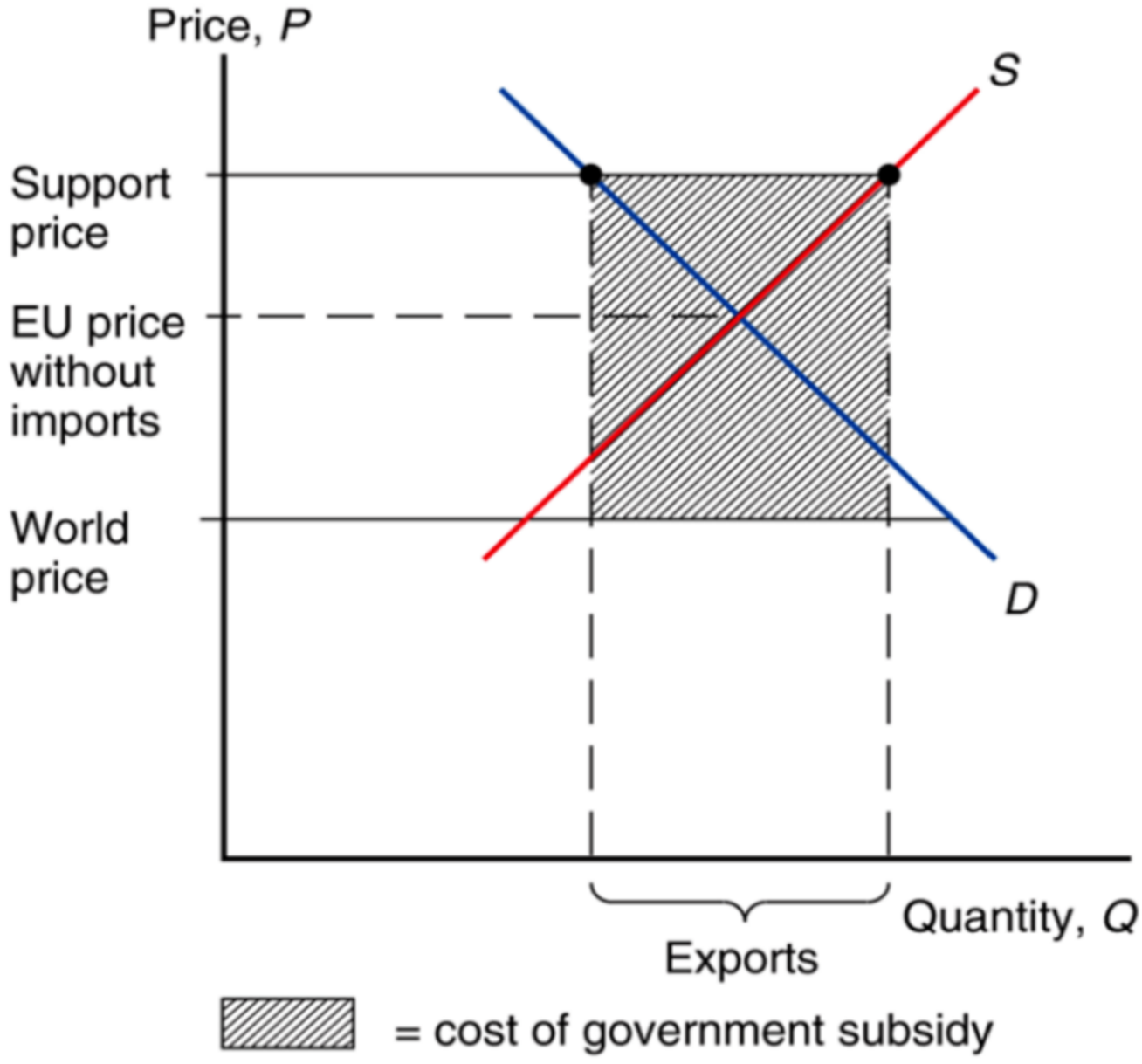
The EU has the Common Agricultural Policy which is a system of agricultural subsidies in effect since 1962. The objective was to increase productivity and secure food supply at reasonable prices

- Turned the EU from food importer to net food exporter

The objectives of the programme seem to be out of date, but getting rid of the programme is difficult. Currently the programme is a big waste of tax money

- Accounts for 40% of EU budget
- Costs roughly 30B EUR more than benefits

Effect of CAP on prices



A voluntary export restraint is similar to an import quota only imposed by the exporting country.

- The restraint is often requested by the importing country

The profits/rents go to the foreign government/producer while the exporting country agrees to sell a restricted quantity at a higher price

- In the 1980s the US used this to restrict Japanese car imports

For each implemented trade policy the domestic price will increase

- Domestic producers gain as they produce more
- Domestic consumers will demand less and lose

p_{world} will decrease if *Home* is large in economic terms.
The implemented policies have divergent effect on government revenues

- Tariffs generate revenue, subsidies drain it, an quotas have no effect

Importantly, trade policies create production and consumption distortions.

	Tariffs	Export subsidy	Import quote	Voluntary export restraint
Consumer surplus	Decreases	Decreases	Decreases	Decreases
Producer surplus	Increases	Increases	Increases	Increases
Government revenue	Increases	Decreases	Unchanged	Unchanged
Overnall national welfare	Ambiguous	Decreases	Ambiguous	Decreases

In general trade policies are not efficient. Consider support for farmers which exists in most countries, there are a number of ways to help them out

1. Tariffs
2. Export subsidies
3. Direct income transfers

Implemented trade policies seem to always be biased against trade.

- e.g. tariffs are preferred over export quotas

This is mainly historically driven due to revenue raising.

The level of protection received by an industry is often higher when

- It is a low wage low skill labour intensive industry
- It has high import penetration
- Produces consumption goods
- Production that is regionally concentrated, while consumers are dispersed