

# V - Trade Policy Under Perfect Competition

**Part I: Tariff Instruments in the Small Country Case**

**Part II: Large Country Case and Non-Tariff Instruments**

# General Introduction

- Until now we compared perfectly closed with perfectly open economies.
- In reality there are trade barriers, such as "trading" or "transaction" costs, transport costs, taxes...
- In general countries as a whole gain from trade, but often some groups lose.
- These groups may lobby the government to influence trade openness, if no other redistributive policy is implemented.

- Trade policy instruments:
  - tariffs (import taxes), export taxes/subsidies, production subsidies...
  - non-tariff barriers (NTBs): quotas, Voluntary Export Restraints (VERs), manipulation of product standards⇒ this chapter studies the effects of such policy barriers
- In what follows we assume there are aggregate gains from trade. This may come from the HO model, or any model with a similar production frontier and price variation after openness

# Part I

Tariff Instruments in the Small Country Case

- 1. Import Tariffs
- 1.1. Welfare Loss from Import Tariffs: the Small Country Case
- Small country assumption: implementing the tariff does not affect world prices
- Definition: tariff = imported commodity tax
  - denoted  $t$
  - we focus on the case of a country importing good X
  - a tariff may be an *ad valorem tax* (proportional to value, general case) or a *unit tax* (proportional to quantity)
  - we focus on ad valorem tariffs

- Impact of the tariff

- the domestic price of X is now  $p_X = (1 + t)p_X^*$

- ✓ price charged by producers of imported good

- ✓ price matched by local producers due to small country assumption

- the relative price is

$$p = (1 + t)p^*$$

- the government earns

$$tp_X^* (X^d - X^s)$$

in tariff revenues, which are redistributed to the consumer.

- Imperfectly open economy equilibrium

- equilibrium conditions:

$$MRS = MRT = \frac{(1+t)p_X^*}{p_Y^*}$$

- budget constraint:

$$\Leftrightarrow p_X^*(1+t)X^d + p_Y^*Y^d = p_X^*(1+t)X^s + p_Y^*Y^s + tp_X^*(X^d - X^s)$$

$\Leftrightarrow$  trade balance equilibrium at world prices

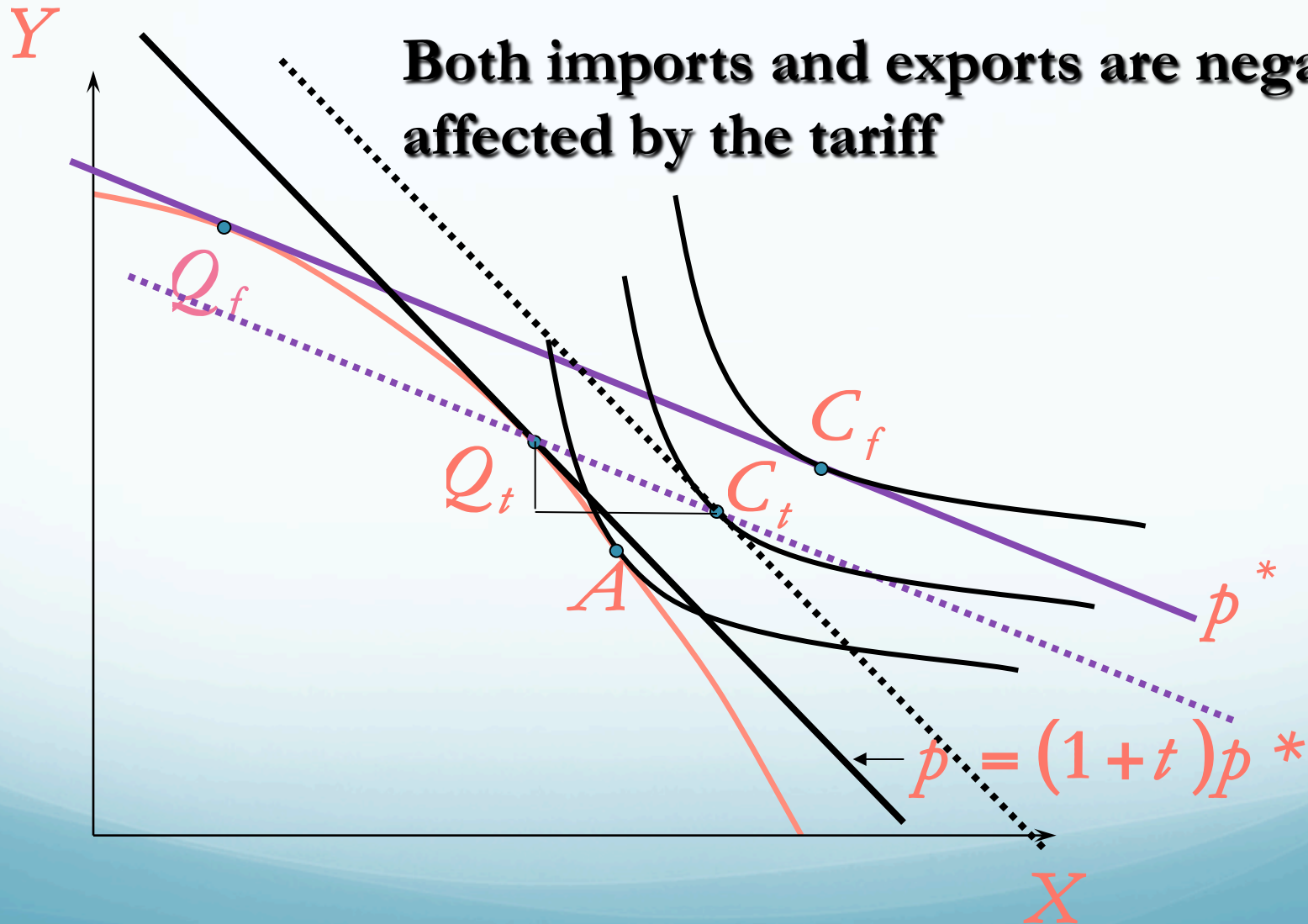
$$p_X^*X^d + p_Y^*Y^d = p_X^*X^s + p_Y^*Y^s$$

$$p_X^*(X^s - X^d) + p_Y^*(Y^s - Y^d) = 0$$

# Trade balance equilibrium at world prices

Consumers face the world price + tariff

Both imports and exports are negatively affected by the tariff





- $A$  : autarky
  - $Q_f, C_f$  : open economy without tariff (free trade)
  - tariff  $\Rightarrow$  X price increases  $\Rightarrow$  reduces the incentives to produce and export good Y
- $\Rightarrow$  production:  $Q_f \rightarrow Q_t$
- ✓ situation closer to the autarkic situation
- budget constraint: passes by  $Q_t$  with slope  $-p^*$
  - consumption,  $C_f$ : on the BC, such as utility is tangent to  $-(1+t)p^*$
- Note: if  $(1+t)p^* > p^a$  prohibitive tariff: no more imports

- Impact of the tariff
  - imports decrease, but also exports!
  - welfare loss: the country loses as a whole
    - ✓ smaller price variation, relative to autarky, than under free trade  $\Rightarrow$  lower gains from trade, lower gains from specialization
    - ✓ at worst: same utility as under autarky if prohibitive tariff
  - redistribution towards the scarce factor: owners of the scarce factor gain, other factor owners lose
  - no impact in the other country because of the small country assumption

- 1.2. Equivalence Between Import Tariff and Consumption Tax + Local Production Subsidy on the Imported Good
- If a local consumption tax,  $c$ , and a local production subsidy,  $s$ , are set on good X:
  - tax income:  $cp_X^*X^d$ , subsidy cost:  $sp_X^*X^s$
  - new budget constraint:

$$p_X^*(1+c)X^d + p_Y^*Y^d =$$

$$p_X^*X^s + sp_X^*X^s + p_Y^*Y^s + cp_X^*X^d - sp_X^*X^s$$

• if :  $c = s = t$

• same budget constraint as with a tariff: trade balance equilibrium at world prices

• same relative price:  $\frac{(1+t)p_X^*}{p_Y^*}$

⇒ same equilibrium, same graphic representation, impossible to determine which policy is implemented

⇒ setting an import tariff is equivalent to tax the consumers and to subsidy the producers of the imported good (and thus the owners of the scarce factor)

This equivalence is *related* to the debate on ‘fiscal devaluations’ and the use of VAT tax rise+payroll tax fall (e.g. ‘TVA sociale’) to substitute for exchange rate devaluations.

- 1.3 Equivalence Between Import Tariff and Export Tax
- An export *ad valorem* tax,  $t'$ , is set on any unit exported
- Producers' income per unit must be the same wherever the good is sold (local or foreign market).

⇒ the local price of the exported good is lower than the world price:

$$p_Y = (1 - t') p_Y^*$$

• Tax income:  $t' p_Y^* (Y^s - Y^d)$

• Budget constraint:

$$p_X^* X^d + (1 - t') p_Y^* Y^d =$$

$$p_X^* X^s + (1 - t') p_Y^* Y^s + p_Y^* t' (Y^s - Y^d)$$

$$\Leftrightarrow p_X^* X^d + p_Y^* Y^d = p_X^* X^s + p_Y^* Y^s$$

$$\Leftrightarrow p_X^* (X^s - X^d) + p_Y^* (Y^s - Y^d) = 0$$

$\Leftrightarrow$  trade balance equilibrium at world prices

- Relative price:  $\frac{p_X^*}{(1-t')p_Y^*}$   
 $\Rightarrow$  same relative price as with a tariff if:

$$1+t = \frac{1}{1-t'}$$

$\Rightarrow$  same equilibrium, same graphic representation, impossible to determine which policy is implemented

- "new" intuition: an import tariff is a tax on exports
- implication: restricting imports by tariffs while simultaneously subsidizing exports is ineffective

- 2. Other Trade Barriers

- 2.1 Export Subsidy

- $s$  : export subsidy ad valorem

- Again, producers' income per unit must be the same wherever the good is sold (local or foreign market):

⇒ the local price of the exported good is greater than the world price

$$p_Y = (1 + s)p_Y^*$$

- Subsidy cost:

$$sp_Y^* (Y^s - Y^d)$$



- Budget constraint:

$$p_X^* X^d + (1+s)p_Y^* Y^d =$$

$$p_X^* X^s + (1+s)p_Y^* Y^s - p_Y^* s (Y^s - Y^d)$$

$$\Leftrightarrow p_X^* X^d + p_Y^* Y^d = p_X^* X^s + p_Y^* Y^s$$

$$\Leftrightarrow p_X^* (X^s - X^d) + p_Y^* (Y^s - Y^d) = 0$$

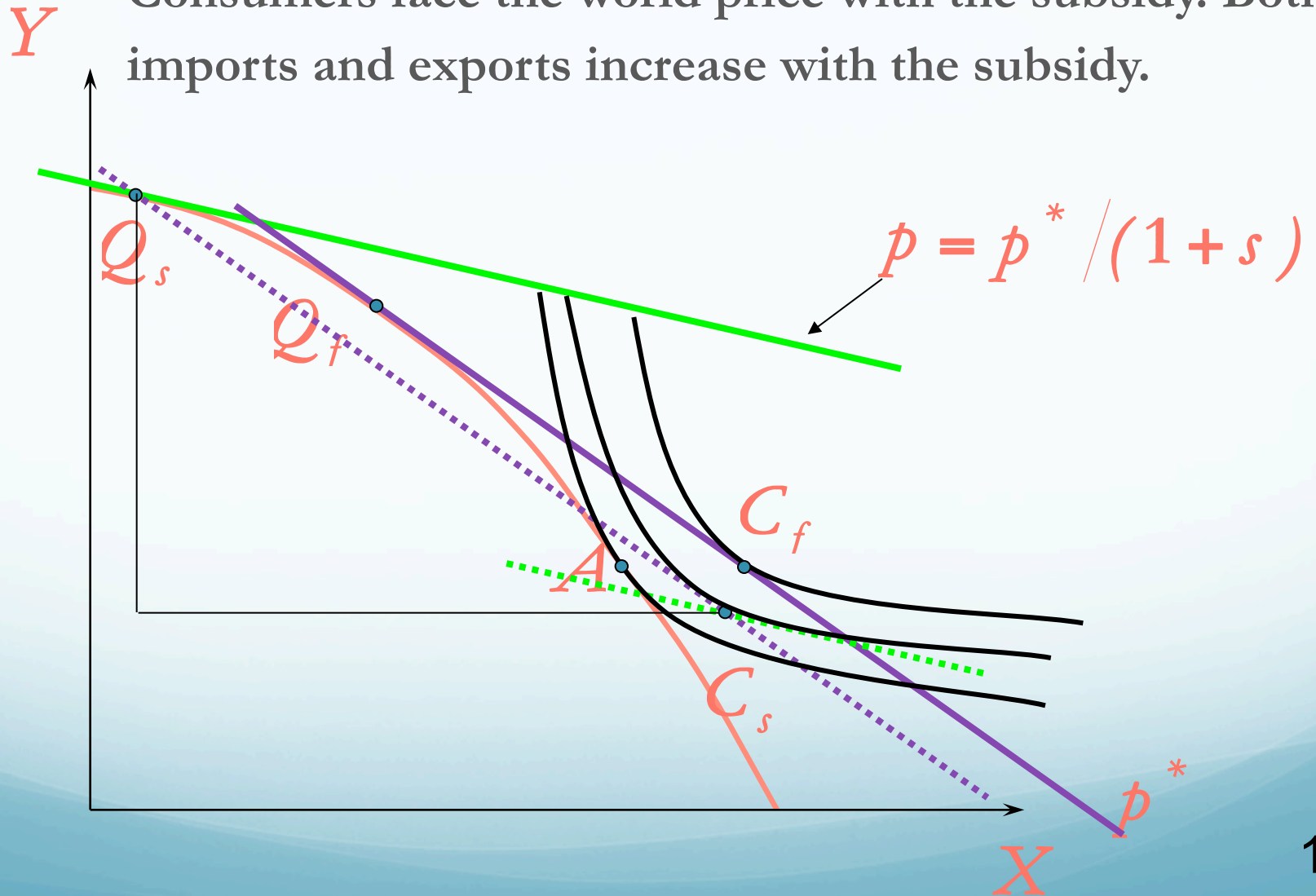
trade balance equilibrium at world prices

- Relative price:  $\frac{p_X^*}{(1+s)p_Y^*}$
- Equilibrium conditions:

$$MRS = MRT = \frac{p_X^*}{(1+s)p_Y^*}$$

# Trade balance equilibrium at world prices

Consumers face the world price with the subsidy. Both imports and exports increase with the subsidy.



- $Q_f, C_f$ : open economy without subsidy

- relative price even smaller than under open economy:

$$\frac{p_X^*}{(1+s)p_Y^*} < p^*$$

⇒ good Y production increases even more ⇒  $Q_f \rightarrow Q_s$

⇒ consumption,  $C_s$  : on the BC going through  $Q_s$ , at the tangency of the

indifference curve and a line of slope  $\frac{p^*}{(1+s)}$

- good X imports are higher than under free trade

⇒ more trade (both exports and imports) than under free trade

- More trade but welfare loss:
  - intuitions: too large price variation, compared to autarky, than under free trade
    - ⇒ excess production of Y, inefficient
  - with a very large subsidy, welfare may even be lower than under autarky ⇒ impossible with a tariff
- For the same price distortion relative to free trade, an export subsidy causes larger losses than a tariff, because no tariff income is generated.

⇒ import tariff and export subsidy have opposite effects on trade:

- world price:  $\frac{1+t}{1+s} p^*$

- if simultaneously used, neutralization:  
⇒ no or small effect

- **2.2 Imported Good Production Subsidy**
- **Recall:**
  - tariffs aim to protect the import-competing producers (the scarce factor owners)
  - but a tariff acts both as a production subsidy for domestic producers and a consumption tax for domestic consumers
  - $\Rightarrow$  why not use a production subsidy only?

- A production subsidy creates 2 distortions:
  - as with a tariff, the local relative price differs from the world price
  - in addition, consumers and producers do not face the same relative price

⇒ standard result of the second-best theory:

*Two distortions can be better than one, although it is best to have no distortions.*

■ Imported good production subsidy,  $s$

■ Consumers face  $p_X^*$ ,  $p_Y^*$

■ Producers face  $(1 + s)p_X^*$ ,  $p_Y^*$

■ Equilibrium conditions:

$$MRS = \frac{p_X^*}{p_Y^*} \text{ and } MRT = \frac{(1 + s)p_X^*}{p_Y^*}$$

■ Note:

$$MRS \neq MRT$$



- Budget constraint:

$$p_X^* X^d + p_Y^* Y^d = p_X^* (1 + s) X^s + p_Y^* Y^s - s p_X^* X^s$$

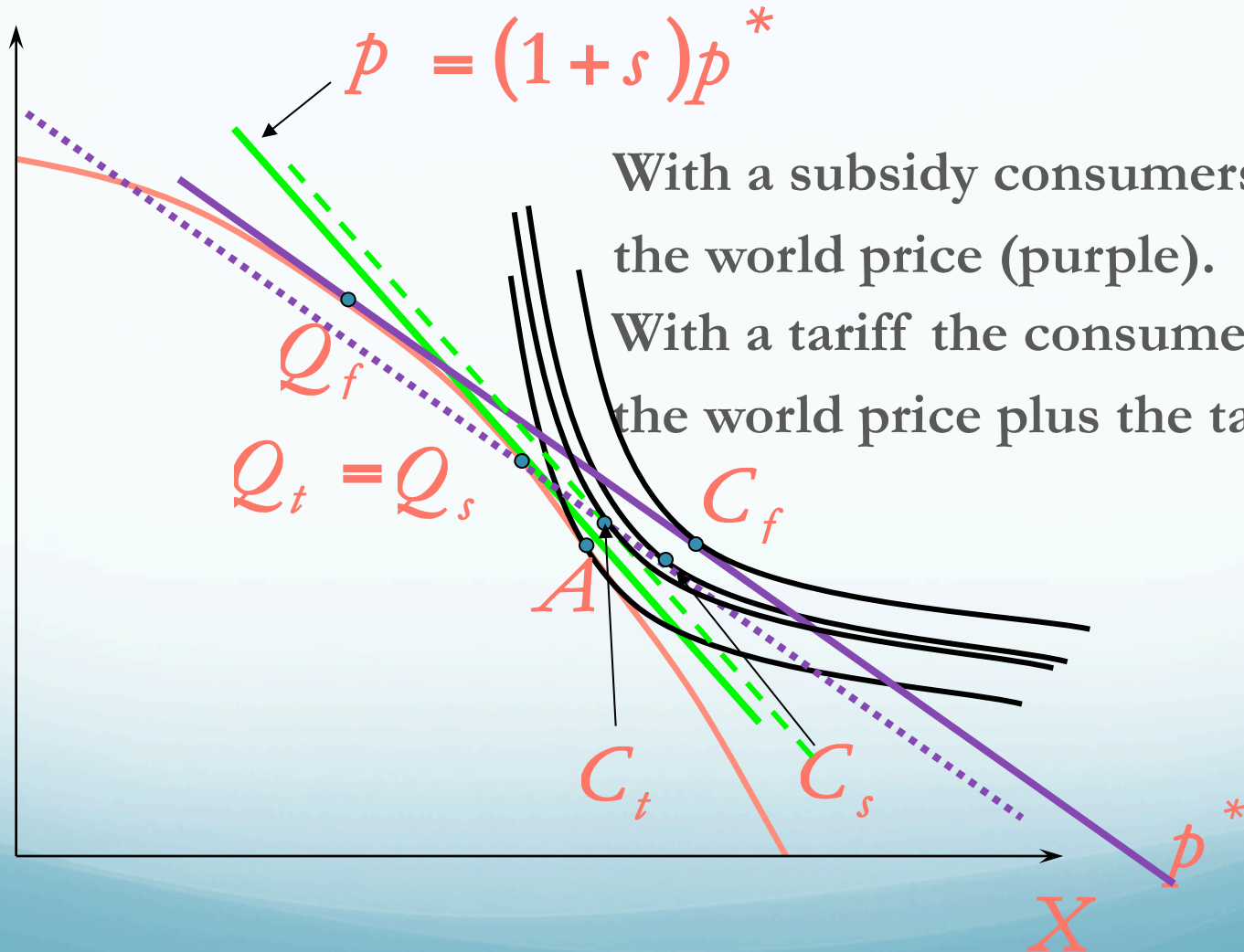
$$\Leftrightarrow p_X^* X^d + p_Y^* Y^d = p_X^* X^s + p_Y^* Y^s$$

$$\Leftrightarrow p_X^* (X^s - X^d) + p_Y^* (Y^s - Y^d) = 0$$

$\Leftrightarrow$  trade balance equilibrium at world prices

Welfare under a production subsidy and a tariff that have equivalent effects on production.

$Y$



- $Q_f, C_f$ : perfectly open economy

- $Q_t, C_t$ : import tariff case

- production subsidy

⇒ same incentives for producers as with the tariff ⇒  $Q_s = Q_t$

⇒ budget constraint: passes through  $Q_s$  with slope  $-p^*$

⇒ consumption,  $C_s$ : on the BC where it is tangent to the indifference curve, slope  $-p^*$

- ⇒ situation closer to the perfectly free trade situation
- ⇒ welfare higher than with the tariff but still lower than under free trade
- ⇒ second-best theory: two distortions are better than only one, because the gains from exchange are less reduced than with a tariff
- ⇒ no distortion would be better

- 3. The Optimal Tariff Cases

When is it optimal to have a positive tariff?

- 3.1 Non-Removable Domestic Distortions

- Suppose that good Y producers benefit from a production subsidy that cannot be removed, for political reasons (e.g. strong lobby)

- production subsidy,  $s$

- relative price in production:

$$p_s = \frac{p_X^*}{(1+s)p_Y^*}$$

- consumers relative price:

$$\frac{p_X^*}{p_Y^*}$$

⇒ producers and consumers do not face the same prices: inefficient

- Production subsidy,  $s$ , + import tariff,  $t$

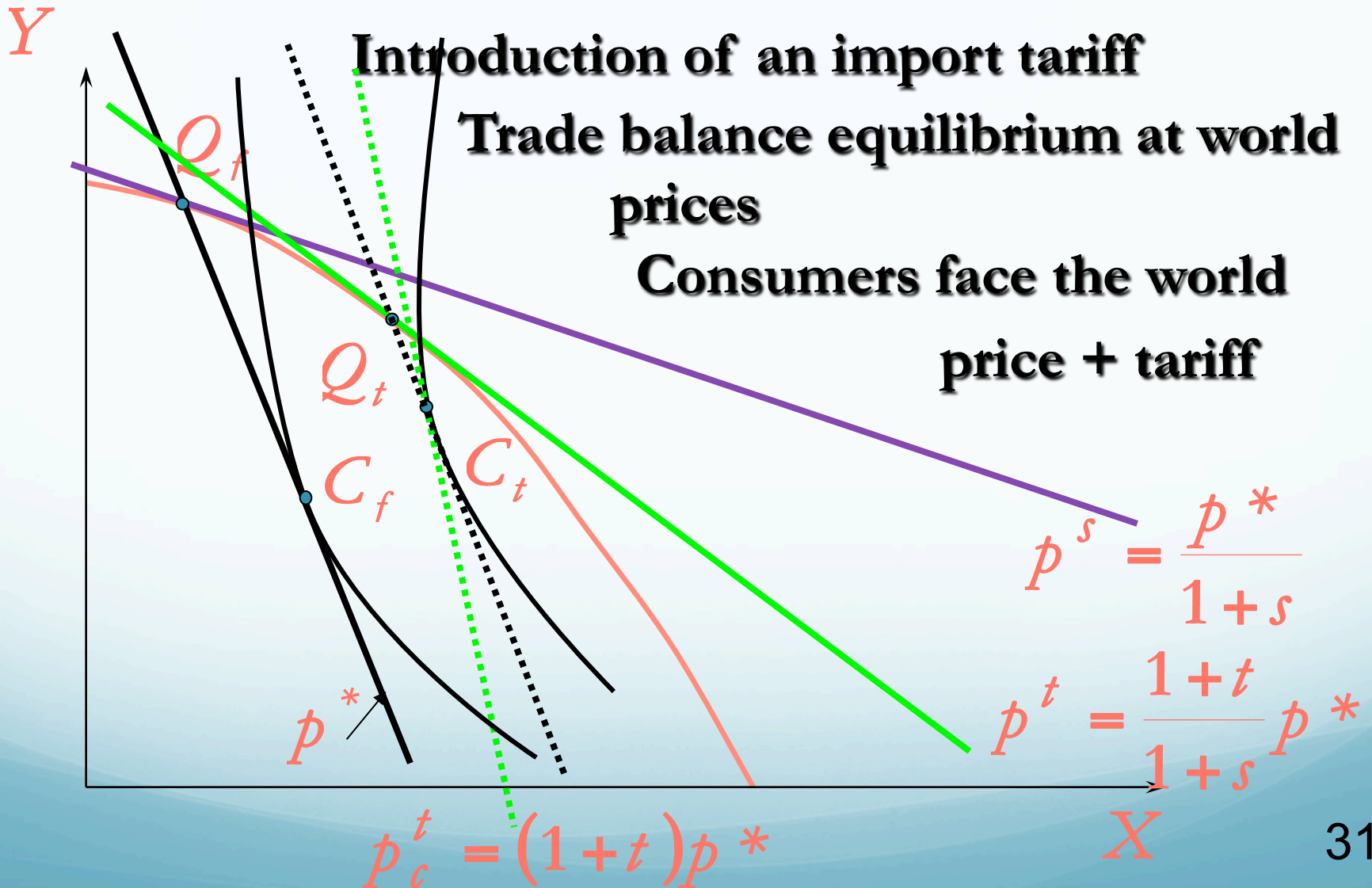
- relative price in production: 
$$P_s = \frac{(1+t)p_X^*}{(1+s)p_Y^*}$$

- consumers relative price: 
$$\frac{(1+t)p_X^*}{p_Y^*}$$

⇒ producers and consumers still do not face the same prices,  
but is it less inefficient?

# Trade balance equilibrium at world prices

Consumers face the world price



- $Q_f, C_f$ : open economy with production subsidy but without tariff
  - $Q_t, C_t$ : open economy with tariff and production subsidy
- ⇒ the original distortion justifies the use of a tariff
- the tariff creates a distortion that neutralizes the first distortion
  - in particular, the tariff reallocates production across sectors *towards* efficient specialization
- ⇒ again, second-best theory effect