EE451

Chapter 8:

The Instruments of Trade Policy

16 October 2020

Coverage of the Chapter

- Import tariffs
  - Specific tariffs
  - Ad Valorem tariffs
  - Other features of tariff schedules
    - Preferential duties
    - Most-favoured-nation (MFN) treatment
    - Offshore assembly provision
  - Measurements of tariffs
    - The ‘height’ of tariffs
    - ‘Nominal’ versus ‘effective’ tariff rates
- Export Taxes and Subsidies

Coverage of the Chapter

- Nontariff Barriers
  - Import quotas
  - Voluntary Export Restraints (VERs)
  - Government Procurement Provisions
  - Domestic Procurement Provisions
  - European Border Taxes
  - Administrative classification
  - Restrictions on Services Trade
  - Trade-Related Investment Measures (TRIMs)
- Domestic policies that affect trade

Measurement of a Country's Average Tariff Rate

(I) Unweighted average tariff rate (UAT)

Goods	Tariff (%)
A	10
B	15
C	20

$$average = \frac{10\% + 15\% + 20\%}{3} = 15\%$$

Drawback: not take into a/c the relative importance of imports

Measurement of a Country's Average Tariff Rate

(II) Weighted average tariff rate (WAT)

Goods	Tariff (%)	Import Values (1000s)
A	10	500
B	15	200
C	20	100

$$average = \frac{10\%(500)+15\%(200)+20\%(100)}{500+200+100} = 0.125 \quad or \quad 12.5\%$$

An inclusion of a prohibitive tariff (a rate that is so high that it totally prohibits imports) could result in the same WAT.

- eg: let's consider Good D with tariff = 200% and so import values = 0.

Nominal vs Effective Rates

- Nominal Tariff Rates
  - Specific rates
  - Ad valorem rates
- Effective Rate of Tariff (ERP)
  - Measure percentage change in the value added in an industry because of an imposition of a tariff structure.

A Computation of ERP

- Given 3 goods:
  - F = final product where *F = f(A,B)*
  - A & B = intermediate products
- Under free trade:
  - P_F = 1,000
  - P_A = 500
  - P_B = 200

  } $VA_F = 300$
- Under protection:
  - t_F = 10% ➔ P_F' = 1,000 + 10%(1,000) = 1,100
  - t_A = 5% ➔ P_A' = 500 + 5%(500) = 525
  - t_B = 8% ➔ P_B' = 200 + 8%(200) = 216

A Computation of ERP

- Under protection:
  - t_F = 10% ➔ P_F' = 1,000 + 10%(1,000) = 1,100
  - t_A = 5% ➔ P_A' = 500 + 5%(500) = 525
  - t_B = 8% ➔ P_B' = 200 + 8%(200) = 216

Consumers pay higher prices

$$VA_F' = 1{,}100 - (525+216) = 359$$

Factors of production working in industry F will receive higher returns than under free trade.

$$ERP_F = \frac{VA_F' - VA_F}{VA_F} = \frac{359 - 300}{300} = 0.197$$

A More Common Formula of ERP

$$ERP_j = \frac{t_j - \sum_i a_{ij} t_i}{1 - \sum_i a_{ij}}$$

j = final product;
i = inputs,
t_j = nominal rate on final good
t_i = nominal rate on input i.

Inputs	a_{ij}	Tariff (%)
A	500/1000 = 0.5	5
B	200/1000 = 0.2	8

$$ERP_j = \frac{t_j - \sum_i a_{ij} t_i}{1 - \sum_i a_{ij}} = \frac{0.1 - \left[\left(0.5 * 0.05\right) + \left(0.2 * 0.08\right)\right]}{1 - \left[0.5 + 0.2\right]}$$

$$= \frac{0.1 - 0.041}{0.3} = 0.197$$

Three General Rules of ERP

- If $t_j > WAT_i$ then $ERP_j > t_j$ *(escalated tariff structure)*
- If $t_j < WAT_i$ then $ERP_j < t_j$
- If $t_j = WAT_i$ then $ERP_j = t_j$
- Note:
  - ERP can be negative, meaning that WAT_i are ***considerably higher*** than t_j.
  - For producers, factors tend to flow into industry with higher ERP_j.
  - Nominal rate of tariff would be more often judged by consumers as it would affect their welfare.

ERP once again

- The effective rate of protection (or ERP) is a summary measure of the total protective effect of the overall **tariff structure**.
  - Tariffs on final goods improve the returns to factors employed in producing them, whereas tariffs on intermediate goods reduce the returns to those same factors.

Tariff structure refers to the relationship among tariffs in related industries.

Why Calculating ERP?

- Concerned with the welfare effects of protection.
- The presence of intermediate goods needs to be acknowledged.
  - Tariffs on steel, for instance, would raise the cost of producing automobiles, even if there were a protective tariff on cars.
- The term ‘effective protection’ refers to the fact that all such tariffs need to be taken into account into computing the net protective structure of the tariff structure.

What does ERP tell us?

- When $ERP_j > t_j$, the combined tariff structure **effectively raises** payment to primary factors producing the *j* product.
- This means the nominal tariff has a magnified effect on the value added.
- When there are no intermediate goods, ERP reduces to the nominal rate.
- When all the nominal rates are equal, the effective rate has the same value ➔ this means 'uniform nominal protection implies uniform effective protection.

What does ERP tell us?

- The formula also shows how tariffs and taxes applied to an industry's intermediate inputs reduce the ERP afforded to the industry.
- A sector may be protected by positive nominal tariffs at the final stage and yet receive negative effective protection if the tariffs and taxes applied to its intermediate inputs are sufficiently high.
- It appears to capture certain general equilibrium phenomena in a simply way.

The Impact of an Import Tariff

- A small country case
- A large country case
  - Distribution of tariff incidence
- Tariffs are costly to an economy because
  - They distort the prices paid by consumers.
  - They divert resources away from more productive uses and result in trade pattern that is different from what CA or HO predicts.
- In conclusion, tariff reduces welfare in terms of a creation of deadweight loss (**production distortion loss plus consumption distortion loss)**.

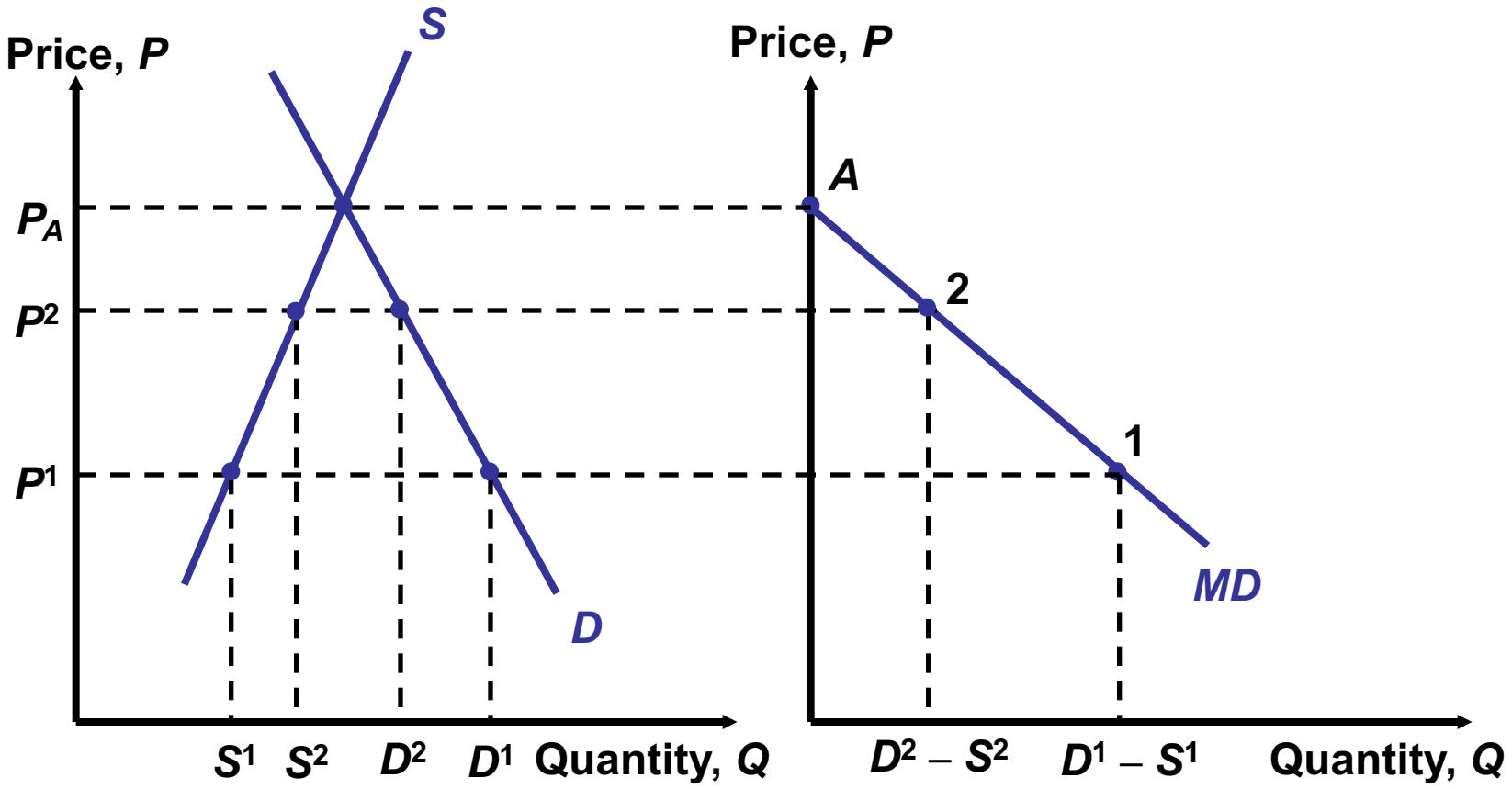
Costs & Benefits of Import Tariff

- However, loss in consumer surplus may be offset by government revenue if the it was spent on productive alternatives.
- While the nation faces the loss in terms of efficiency loss (or deadweight loss), it could be offsetted by the terms of trade gain.
  - The **efficiency loss** arises because a tariff distorts incentives to consume and produce.
  - The **terms of trade gain** arises because a tariff lowers foreign export prices.

Trade Restrictions in a Partial Equilibrium Setting: The Large-Country Case

- A large country, unlike a small country, can influence world price.
- To determine the world price (P_w) and the quantity trade (Q_w), two curves are defined:
  - Home **import demand curve**
    - Shows the maximum quantity of imports the Home country would like to consume at each price of the imported good.
      - That is, the excess of what Home consumers demand over what Home producers supply: $D_M = D(P) - S(P)$
  - Foreign **export supply curve**
    - Shows the maximum quantity of exports Foreign would like to provide the rest of the world at each price.
      - That is, the excess of what Foreign producers supply over what foreign consumers demand: $S_X = S^*(P^*) - D^*(P^*)$

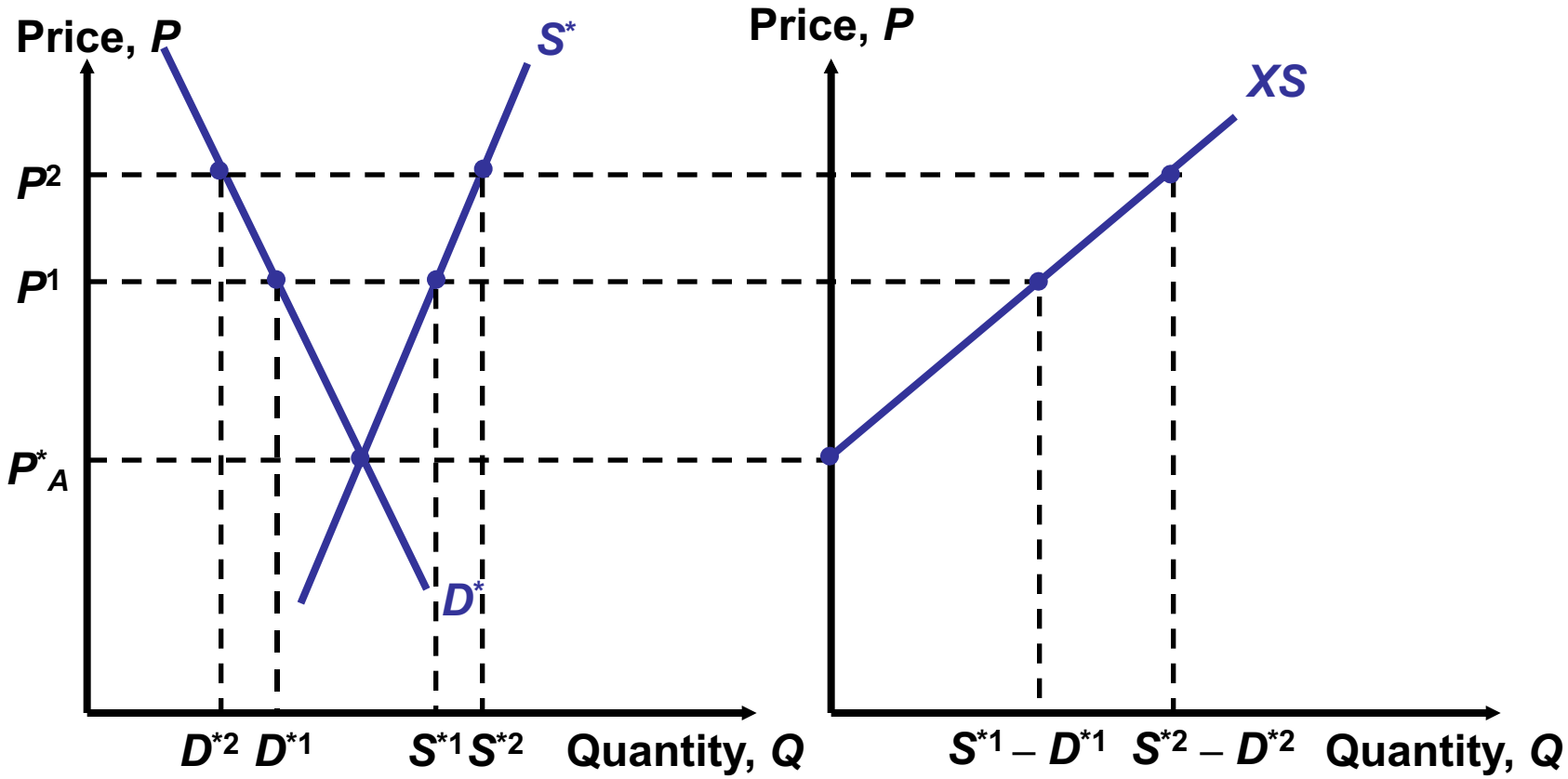
Deriving Home's Import Demand Curve



Properties of the import demand curve

- It intersects the vertical axis at the closed economy price of the importing country.
- It is downward sloping.
- It is flatter than the domestic demand curve in the importing country.

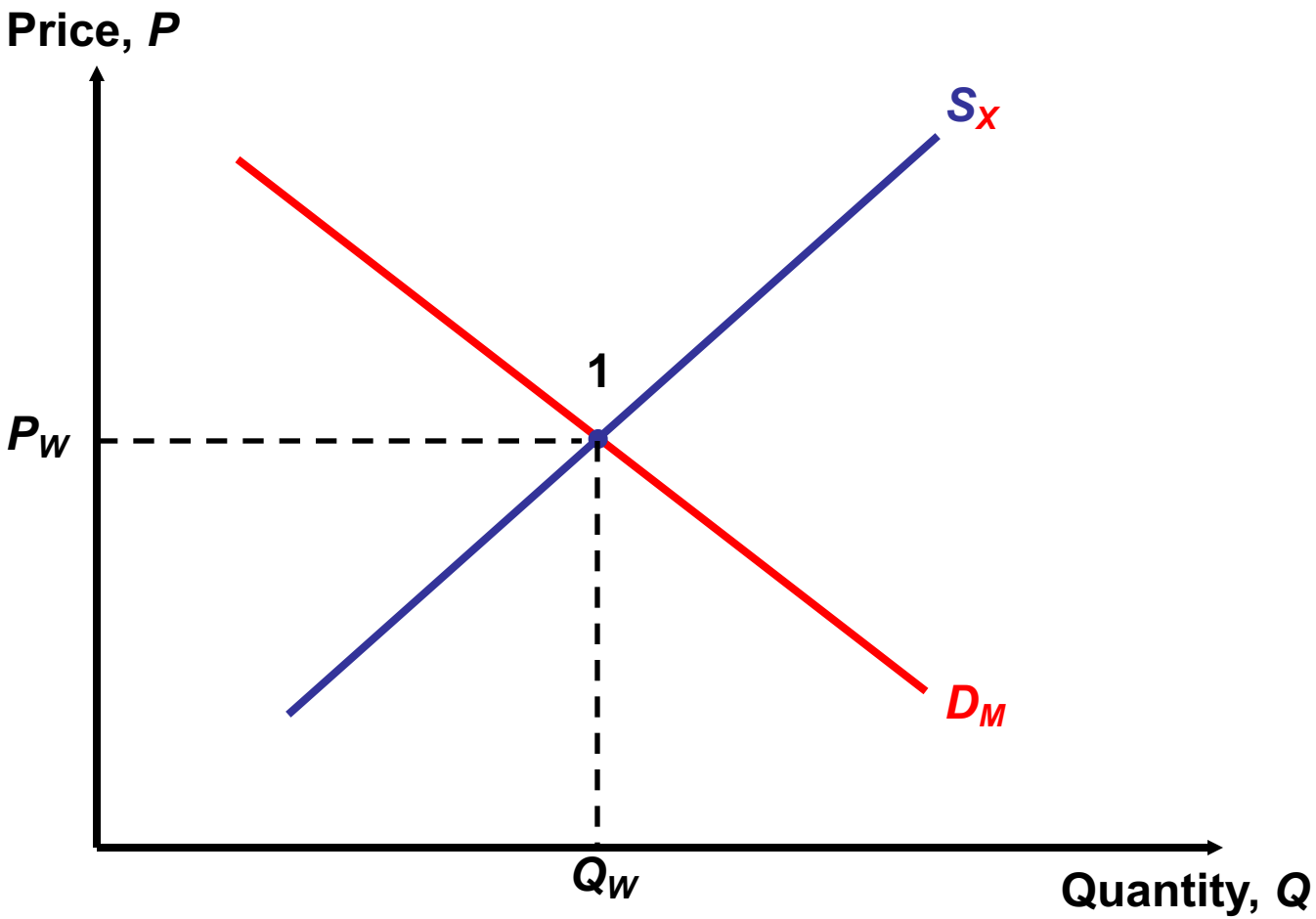
Deriving Foreign's Export Supply Curve



Properties of the export supply curve

- It intersects the vertical axis at the closed economy price of the exporting country.
- It is upward sloping.
- It is flatter that the domestic supply curve in the exporting country.

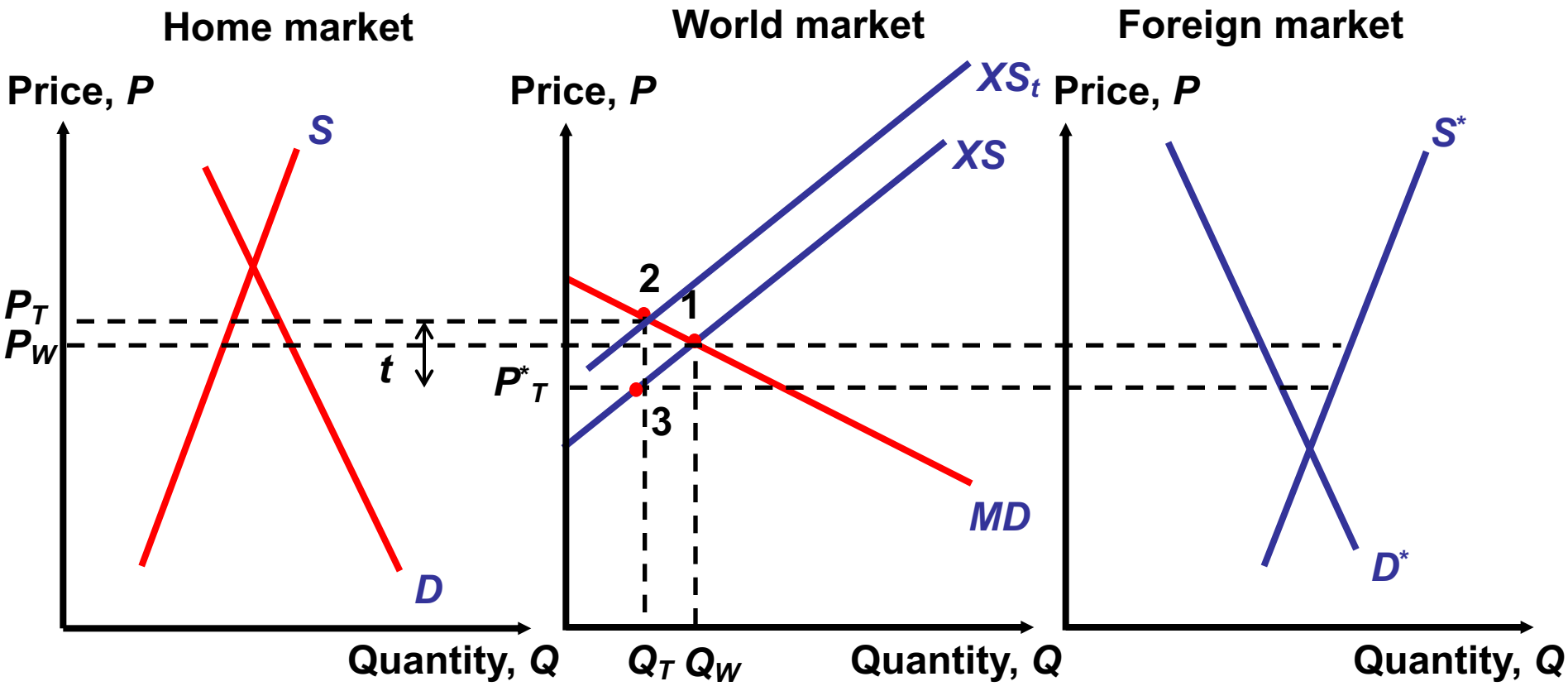
World Equilibrium



Effects of a Tariff

- Assume that two large countries trade with each other.
  - Suppose Home imposes a tax of $2 on every bushel of wheat imported.
    - Then shippers will be unwilling to move the wheat unless the price difference between the two markets is at least $2.
  - For large countries, the increase in the domestic Home price is less than the tariff, because part of the tariff is reflected in a decline in Foreign’ s export price.
    - If Home is a small country and imposes a tariff, the foreign export prices are unaffected and the domestic price at Home (the importing country) rises by the full amount of the tariff.

Effects of a Tariff



Incidence of the Tariff

- In the absence of tariff, the world price of wheat (P_w) would be equalised in both countries.
- With the tariff in place, the price of wheat rises to P_T at Home and falls to P^*_T (= $P_T - t$) at Foreign until the price difference is \$$t$.
  - In Home: producers supply more and consumers demand less due to the higher price, so that fewer imports are demanded.
  - In Foreign: producers supply less and consumers demand more due to the lower price, so that fewer exports are supplied.
  - Thus, the volume of wheat traded declines due to the imposition of the tariff.

Incidence of the Tariff

- If the supply of exports were flatter (more elastic), more of the tax burden would be borne by the domestic consumer and less by the foreign producer.
- The flatter (or more elastic) demand, the more the tariff is paid by the foreign producer rather than by the home consumer.

Import Quota: A Form of NTB

- Like tariff, quota restriction causes price to rise.

Tariffs and World Welfare

- Impacts on world output
  - Tariff raises relative price in home country and produces a difference in the slopes of the two countries' PPC.
  - World output is below the free-trade level.
- World consumption losses
  - Tariff pulls consumption off the contract curve.

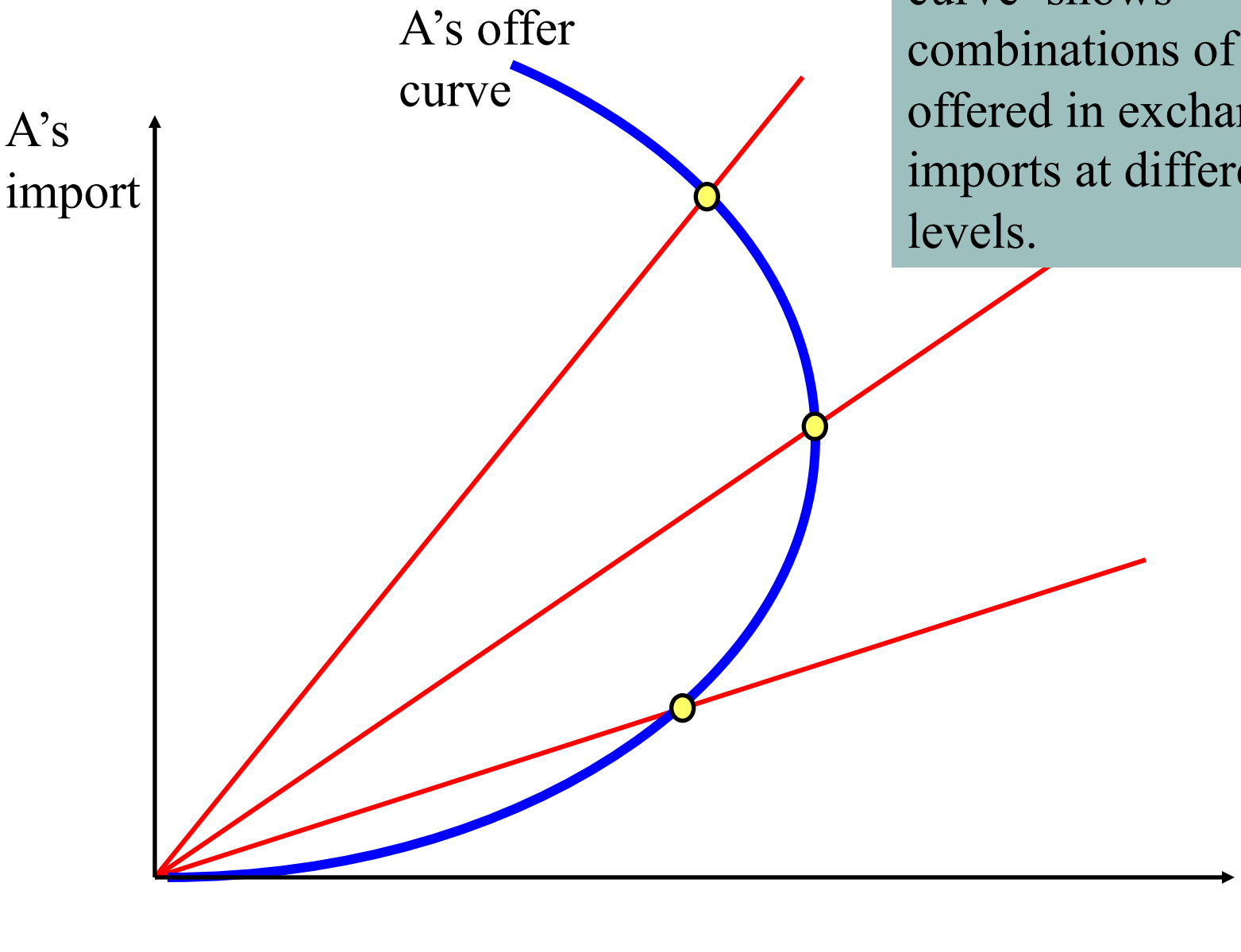
Tariffs and World Welfare

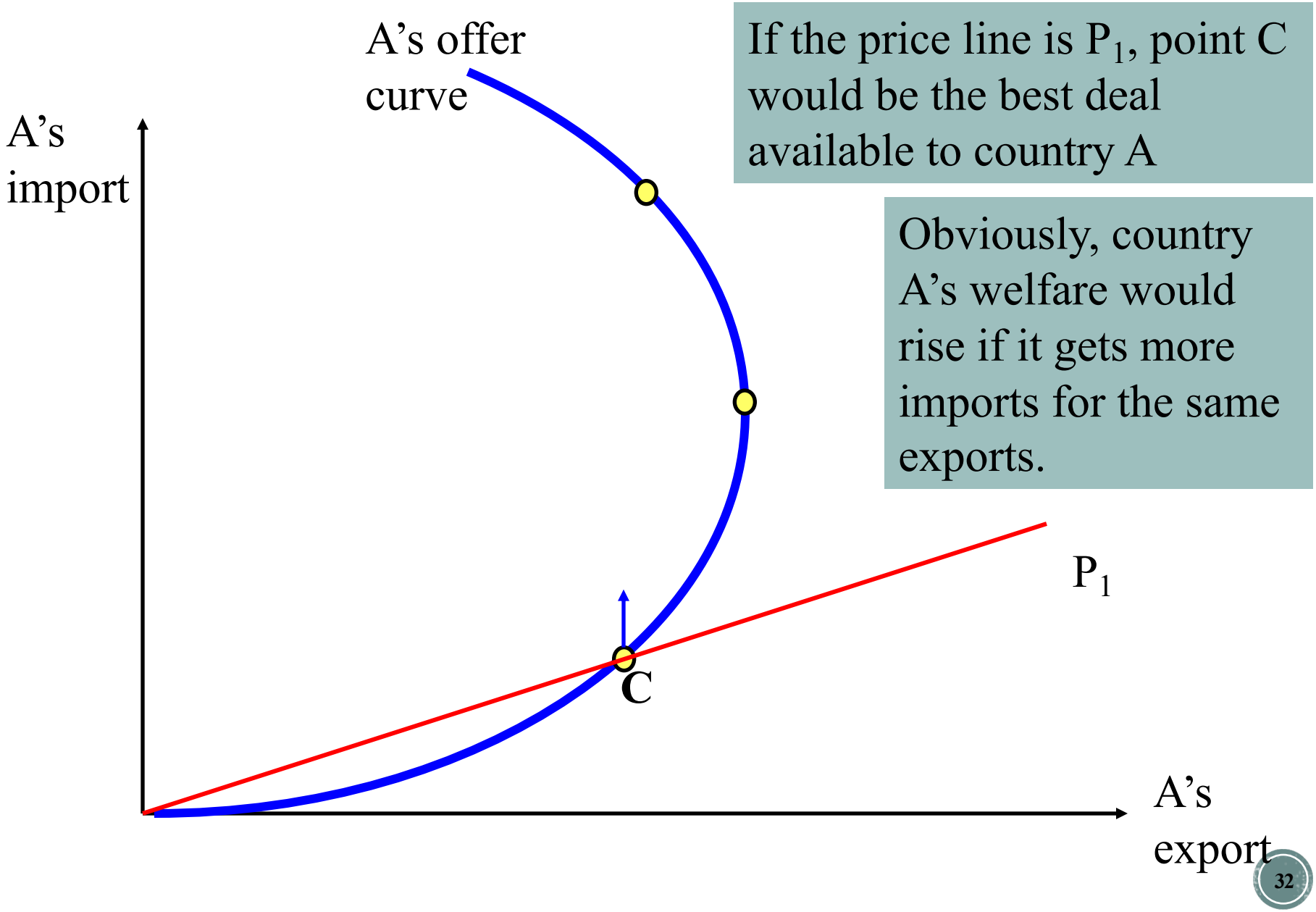
- Tariffs may not prevent.
  - A tariff may fail to protect the home import-competing industry by improving TOT so much that relative domestic price of imported good declines.
- Possibility of retaliation.
  - Gains at cost of partner (beggar-my-neighbour).
  - Retaliation results in further reduction in world welfare.

The Optimal Tariff

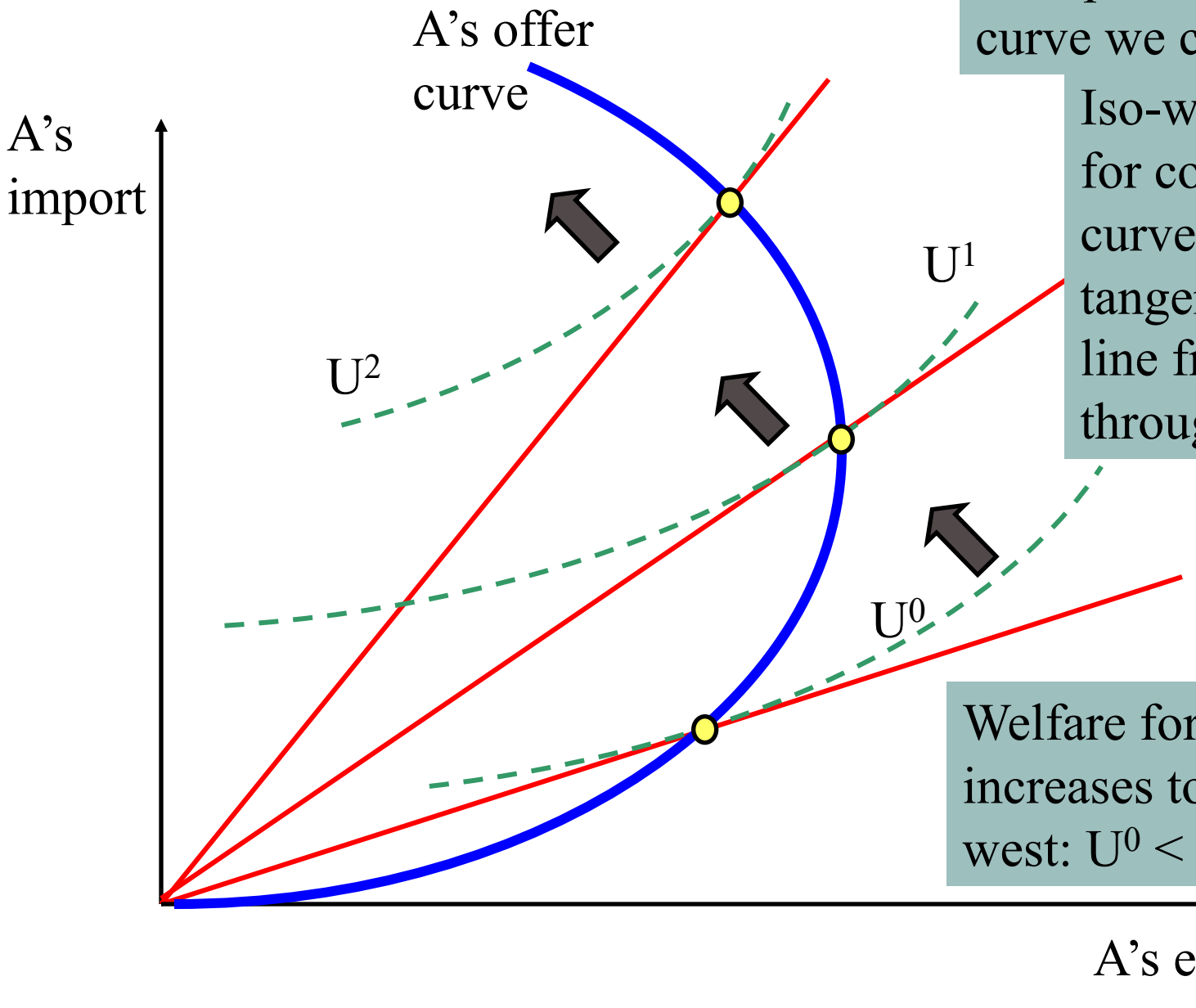
- The rate that maximises the country's welfare.
- It is the rate at which the positive difference between the gain from better prices and the loss from reduced quantity of imports is at a maximum.
  - If the tariff rate > the optimal one, then welfare is below the maximum.

Recall that an 'offer curve' shows combinations of exports offered in exchange for imports at different price levels.



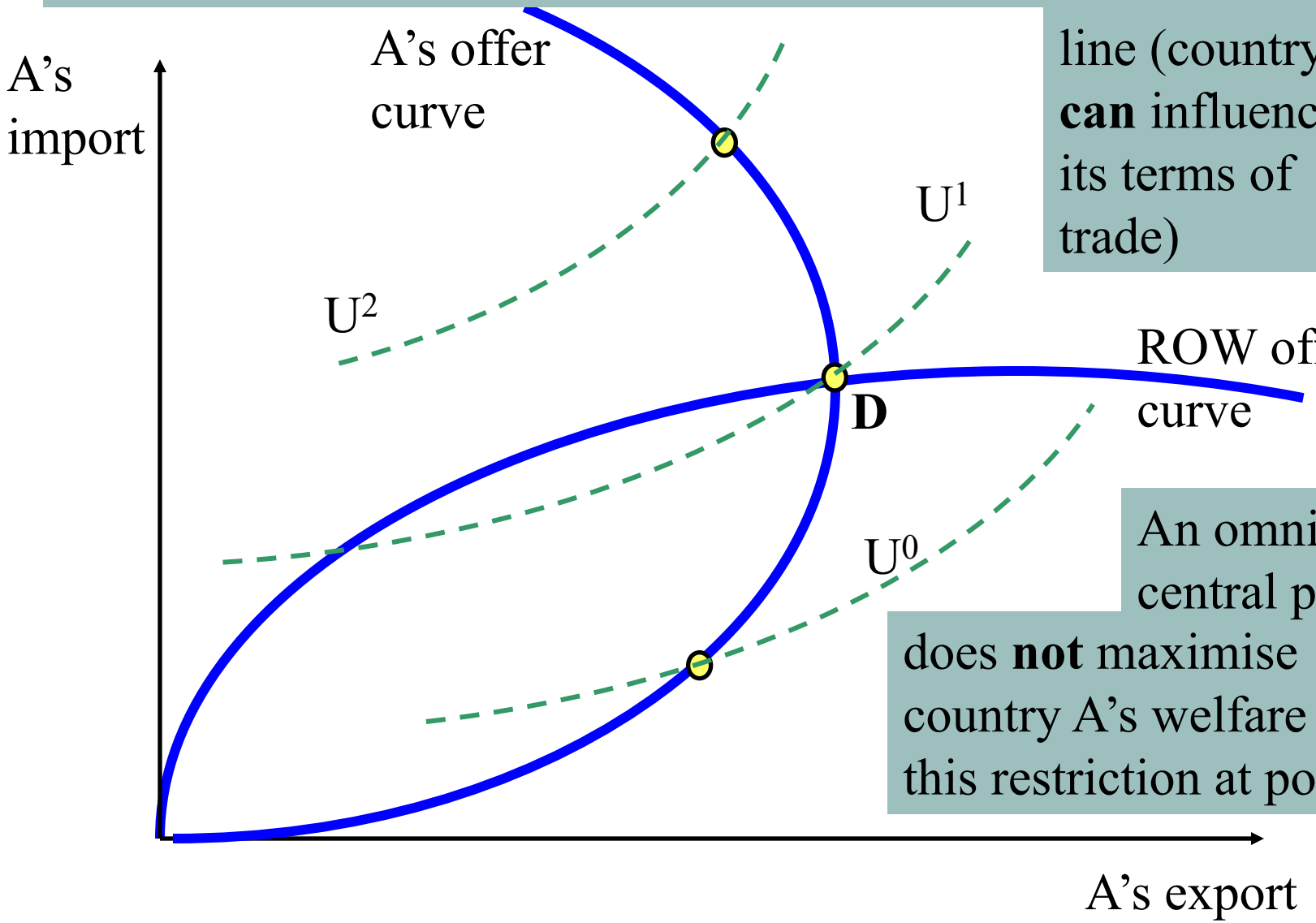

A's offer curve
A's import
If the price line is P_1, point C would be the best deal available to country A
Obviously, country A's welfare would rise if it gets more imports for the same exports.
P_1
C
A's export

This implies that through each point on the offer curve we can draw an Iso-welfare curve for country A. This curve must be tangent to the price line from the origin through that point.

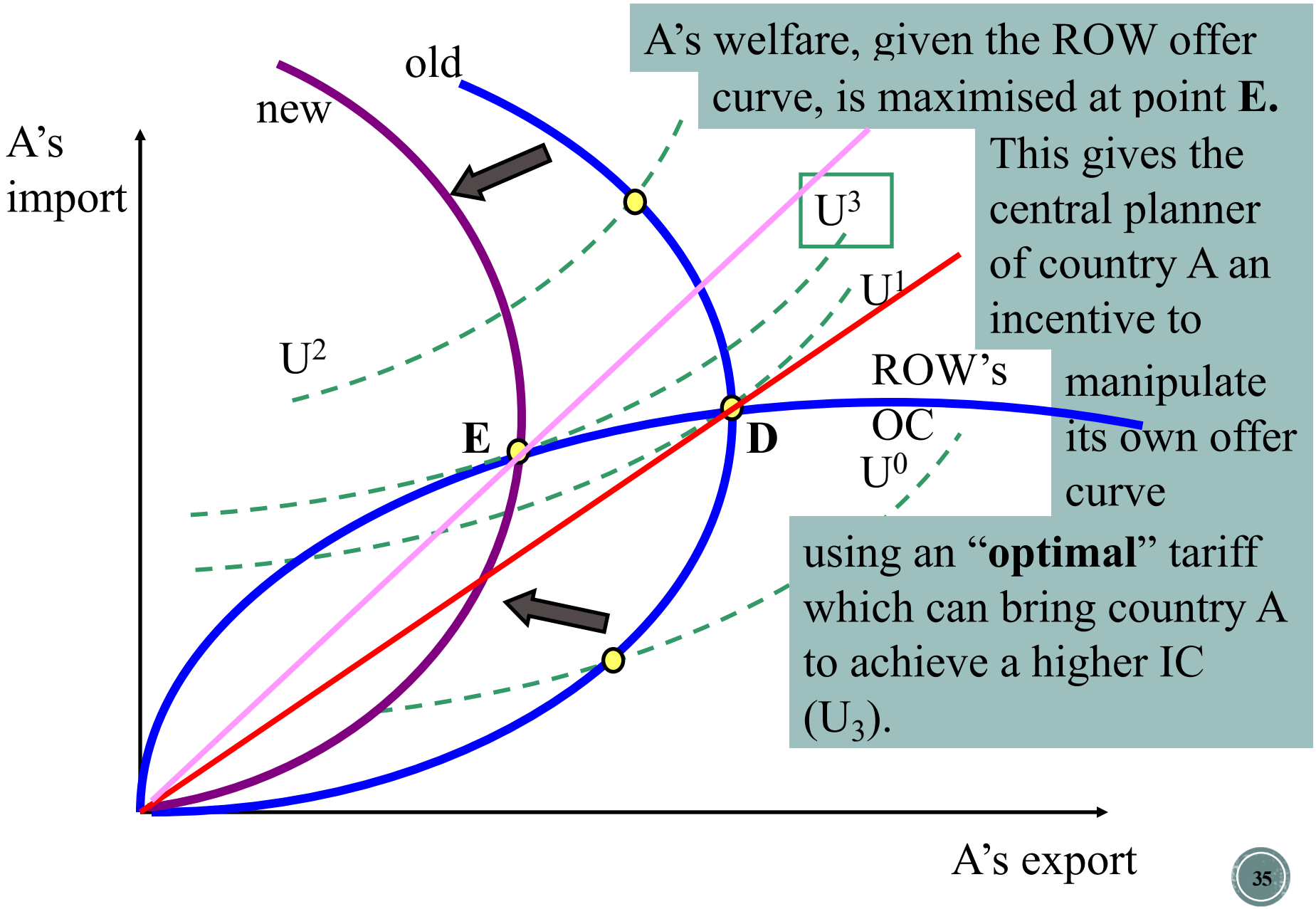


Welfare for country A increases to the north-west: $U^0 < U^1 < U^2$

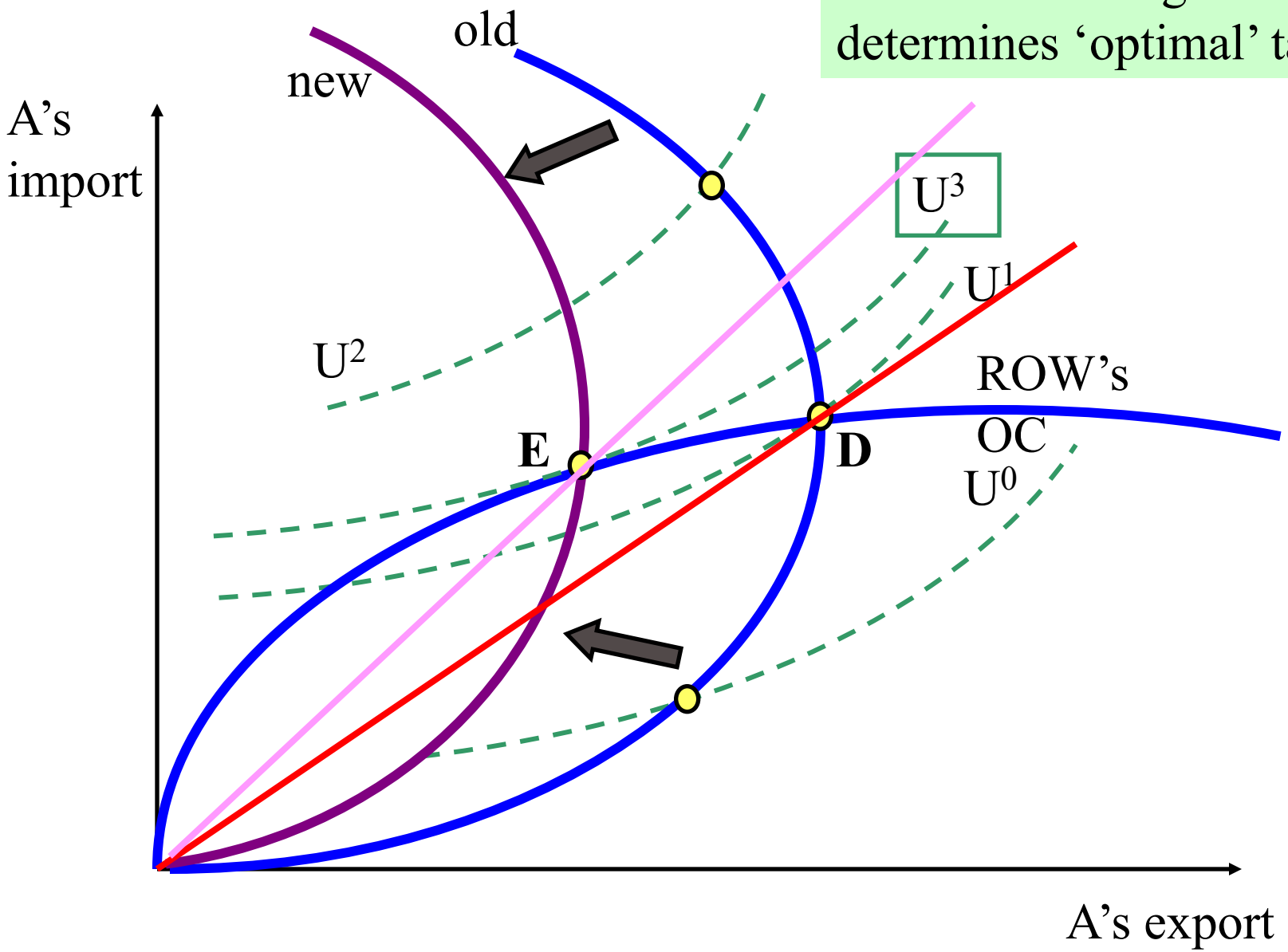
If A is a large country, the ROW offer curve is not a straight line (country A **can** influence its terms of trade)



An omniscient central planner does **not** maximise country A's welfare given this restriction at point **D**

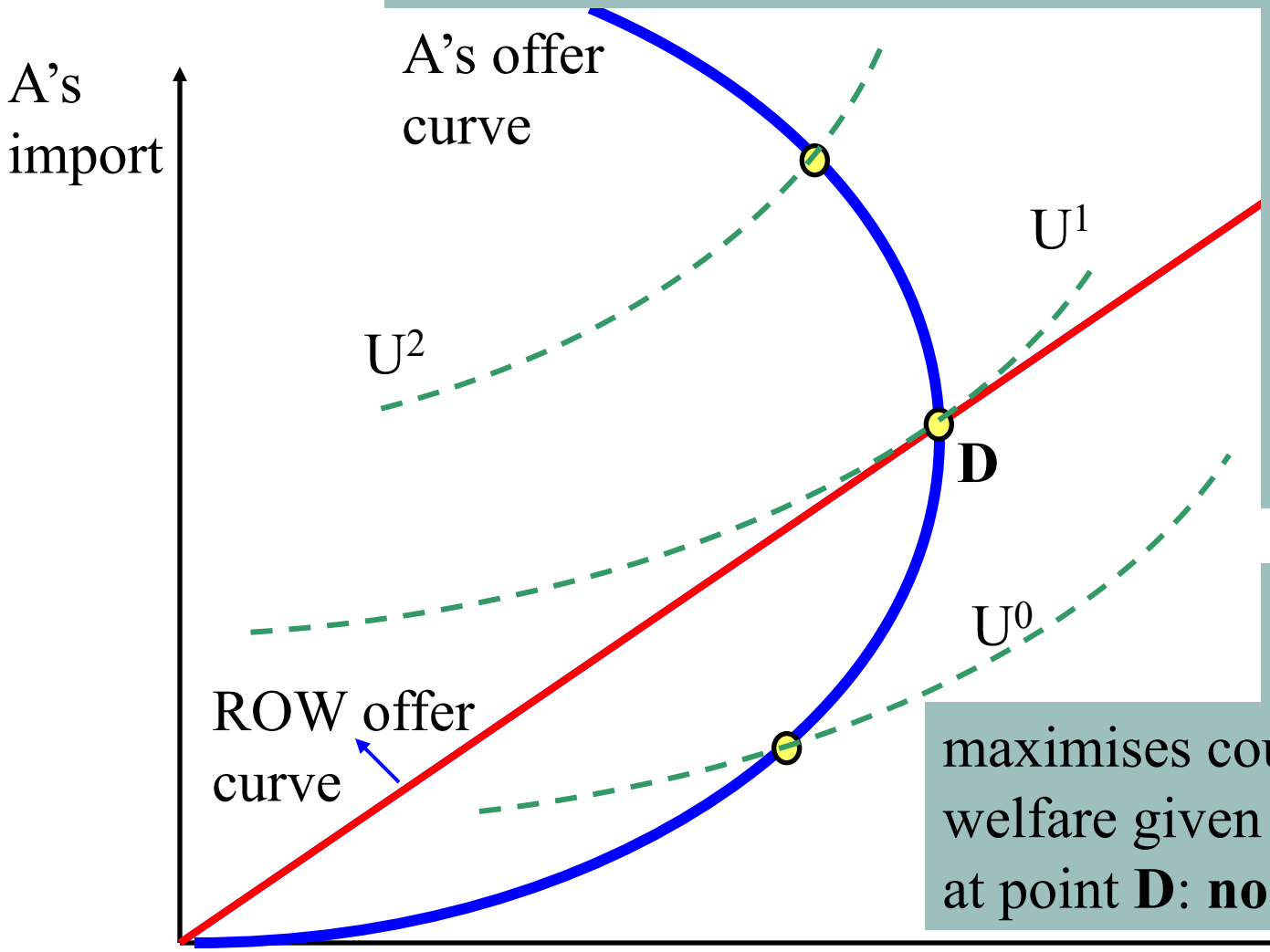

A's welfare, given the ROW offer curve, is maximised at point **E.** This gives the central planner of country A an incentive to manipulate its own offer curve using an "**optimal**" tariff which can bring country A to achieve a higher IC (U_3).
old
new
A's import
A's export
U^3
U^1
U^2
U^0
ROW's OC
E
D

Tangency of trade indifference curve with foreign offer curve determines ‘optimal’ tariff



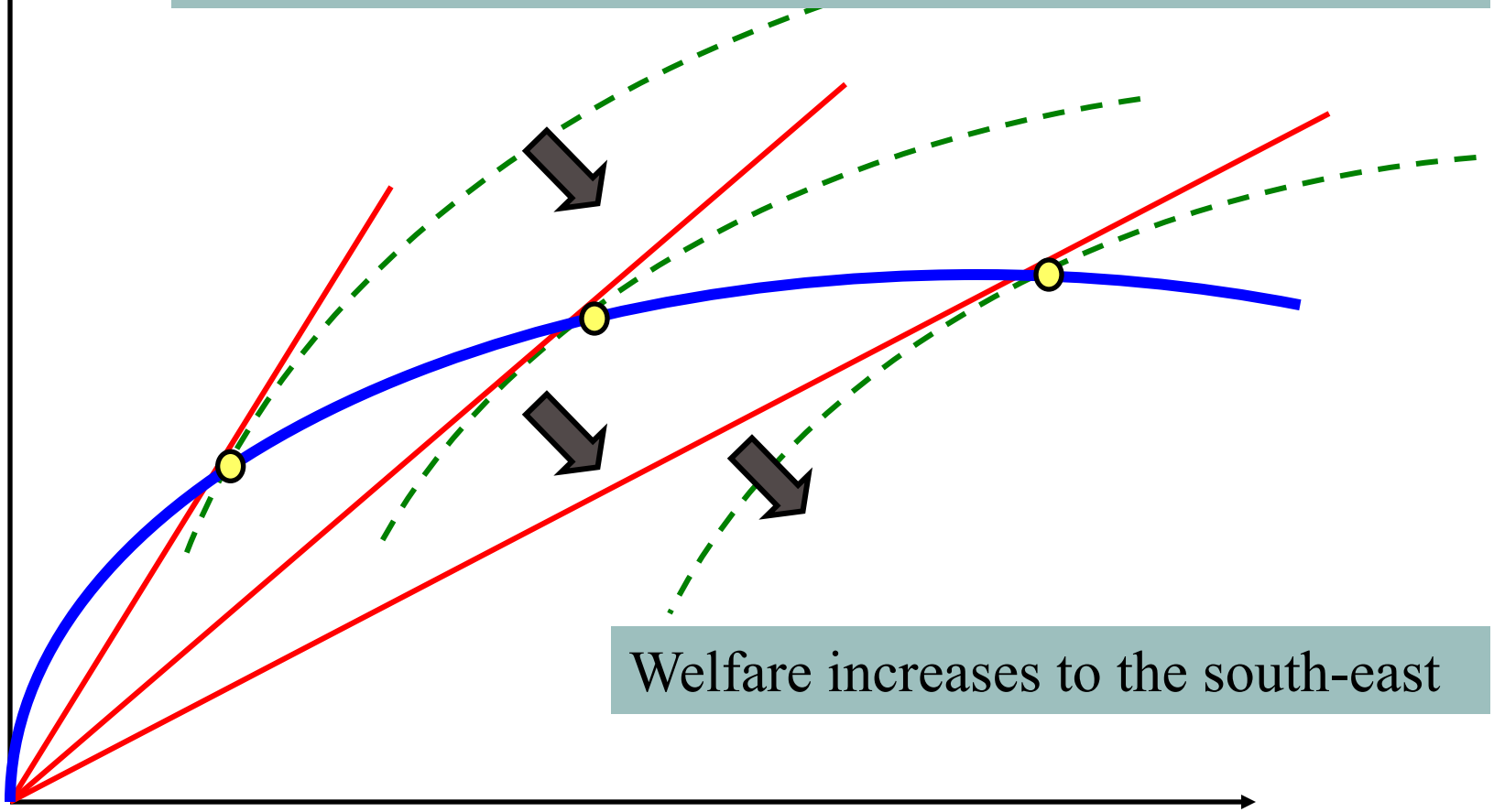
Note for a small country

If country A is a small country, the offer curve it faces from the ROW is a straight line (country A cannot influence its terms of trade).



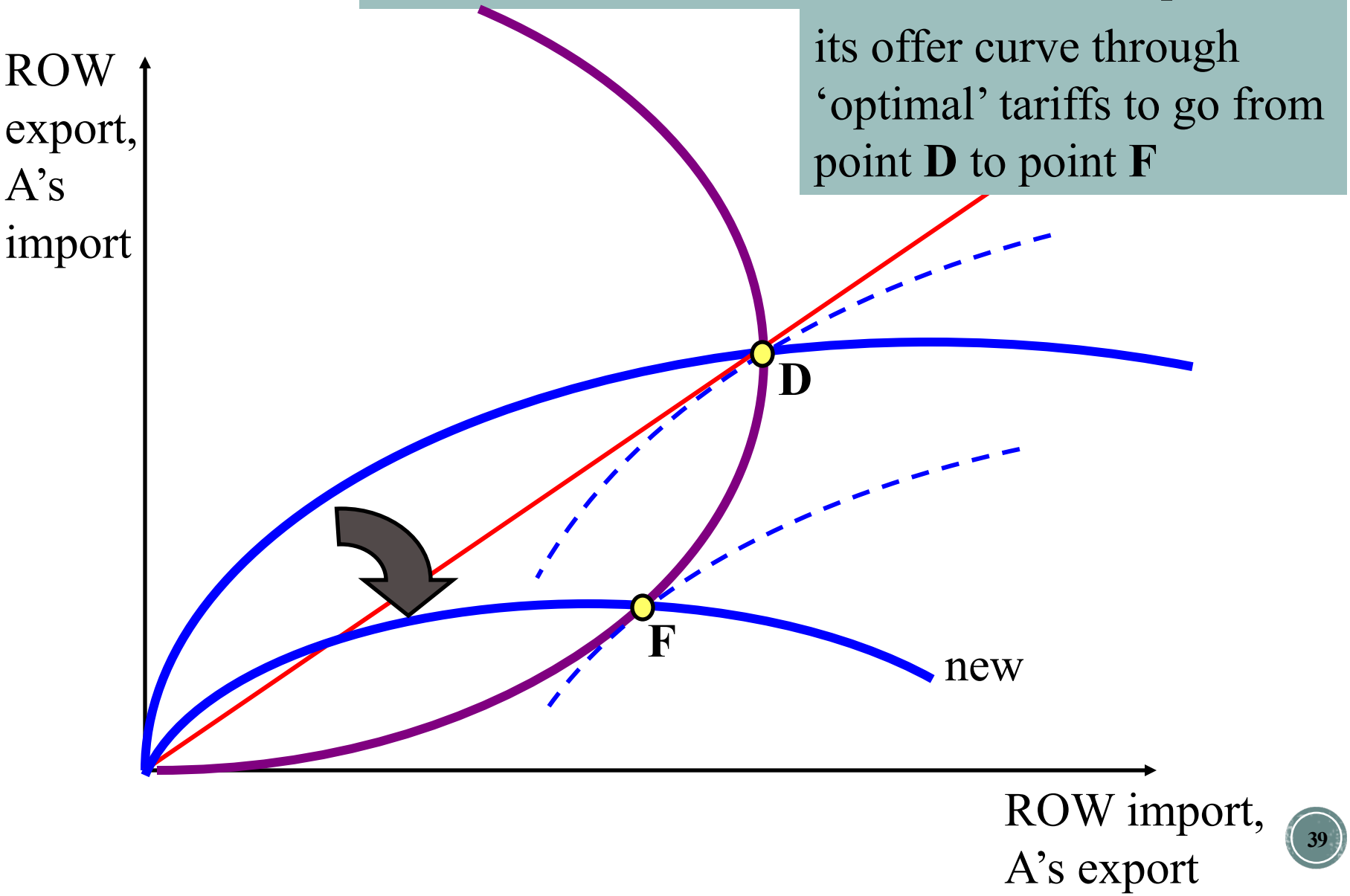
An omniscient central planner maximises country A's welfare given this restriction at point **D**: **no tariffs**

For ROW, however, the situation is reverse
Through each point on the ROW offer curve is an iso-welfare curve tangent to a line through the origin.

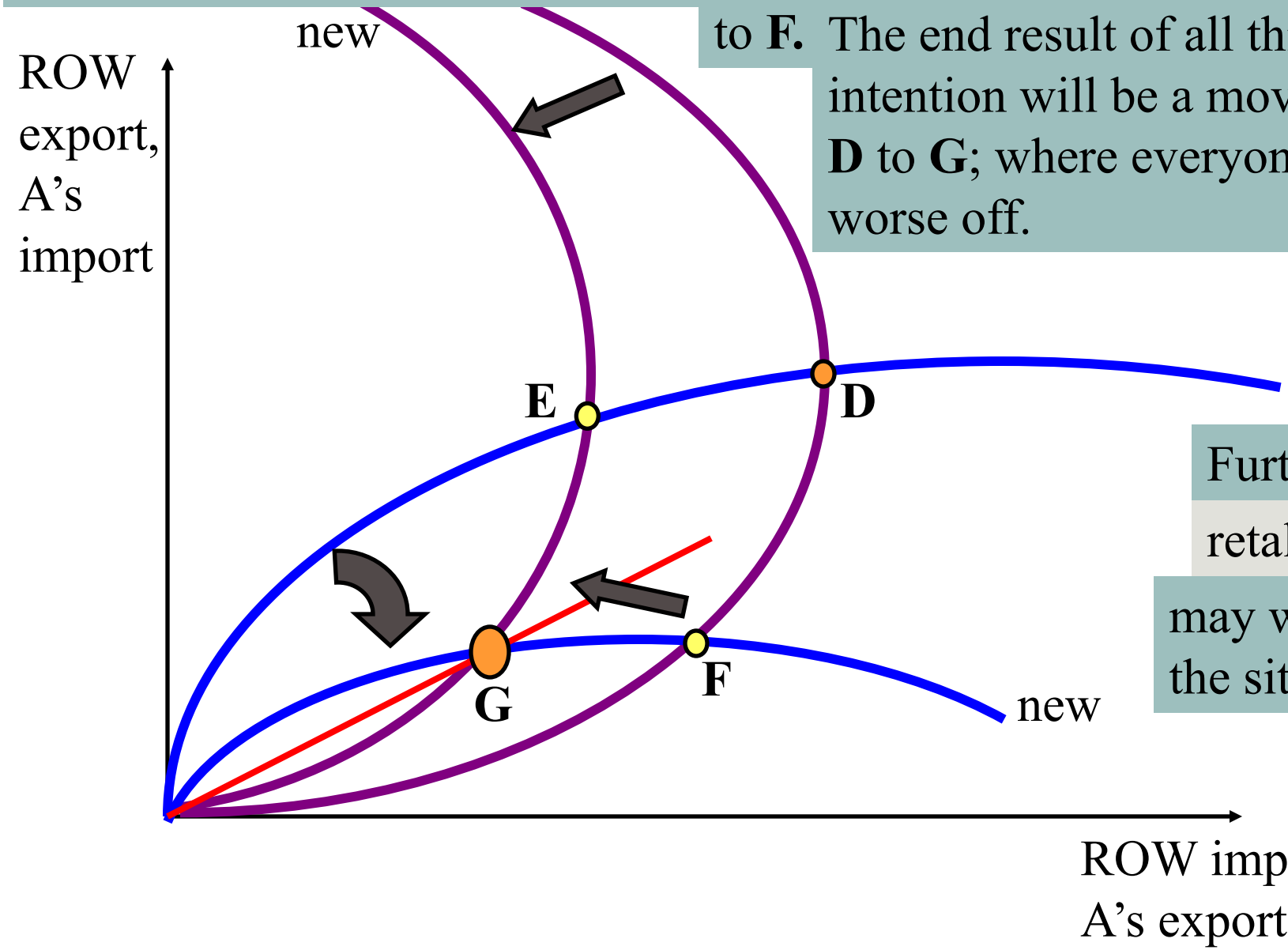


Welfare increases to the south-east

ROW, therefore, has an incentive to manipulate its offer curve through 'optimal' tariffs to go from point **D** to point **F**



If A wants to move from **D** to **E,** while ROW wants to move from **D** to **F.** The end result of all this intention will be a move from **D** to **G**; where everyone is worse off.



Further retaliation may worsen the situation