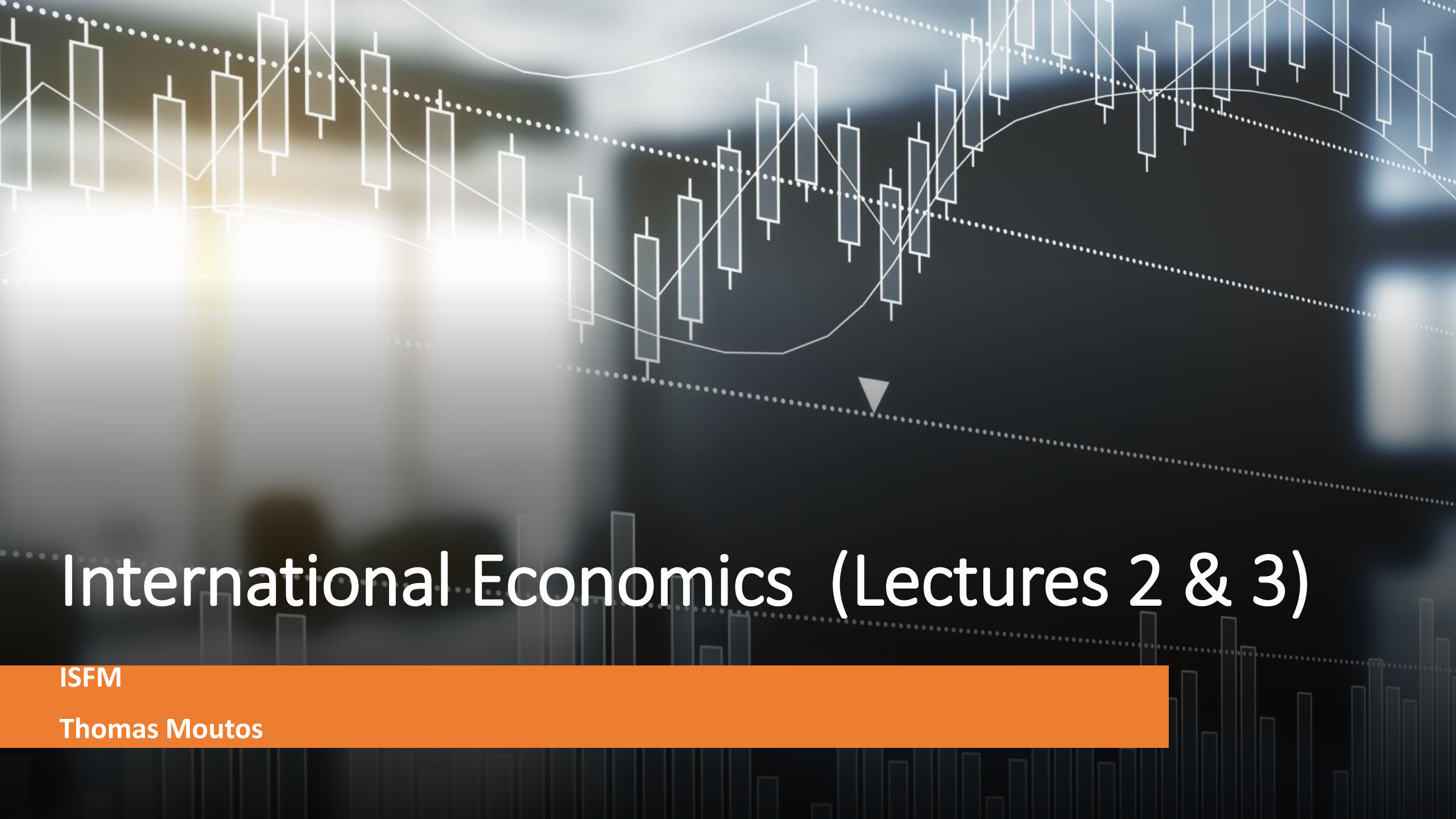


International Economics (Lectures 2 & 3)

ISFM

Thomas Moutos

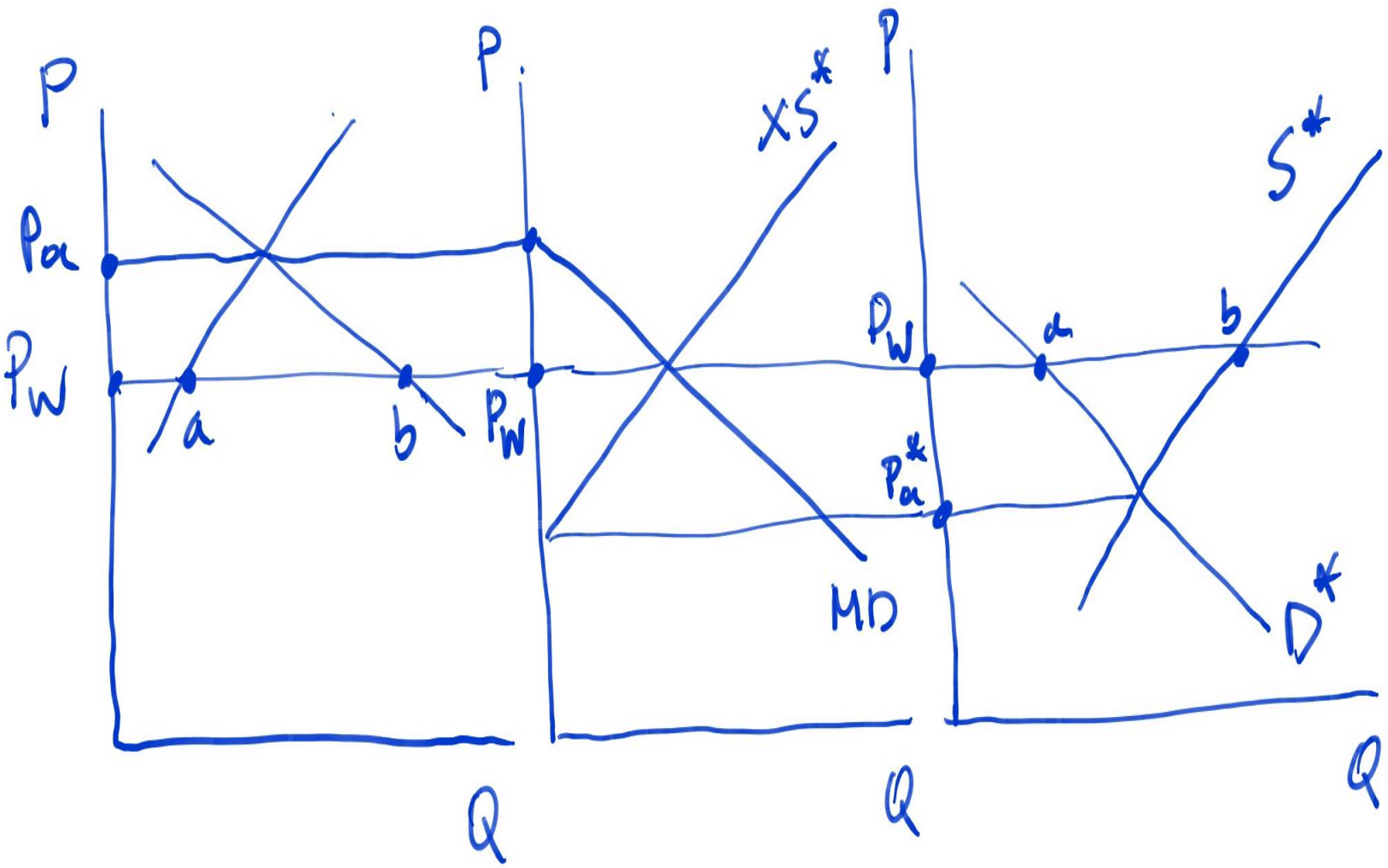
ARE TRADE RESTRICTIONS/WARS RATIONAL?

- In a recent poll, 87% of US economists agreed with the statement " tariffs and quantitative restrictions usually reduce aggregate economic welfare".
- Yet, throughout history countries have used tariffs, quantitative restrictions and other trade-restricting measures.

  A recent example: … " The continuing US-China trade war is already damaging both countries, and its expansion by the United States will only increase the damage and reverberate across the world economy (Peterson Institute, Nov. 2019).

  A historical example: "Before 1850 governments tried to stimulate demand for domestic manufactures by requiring their colonies to sell certain goods only to the mother country (the "metropole") and buy certain other goods only from the mother country. Restrictions on trade turned the terms of trade against the colonies: prices of colonial exports were depressed, while prices of colonial imports were elevated. This, of course, benefited metropolitan producers, who could purchase their inputs (raw materials, agricultural products) at artificially low prices and sell their output (manufactures) at artificially high prices. Virginia tobacco farmers had to sell their leaf to London, although Amsterdam would have paid more; they had to buy their cigars from London, although Amsterdam would have charged less. The rents created this way went to enrich the manufacturers and "merchant princes" … (Frieden, 2012)
- Are there economic arguments that can make trade restrictions rational?
- How can we explain the occurrence of tariff/trade wars?

Import Demand and Export Supply



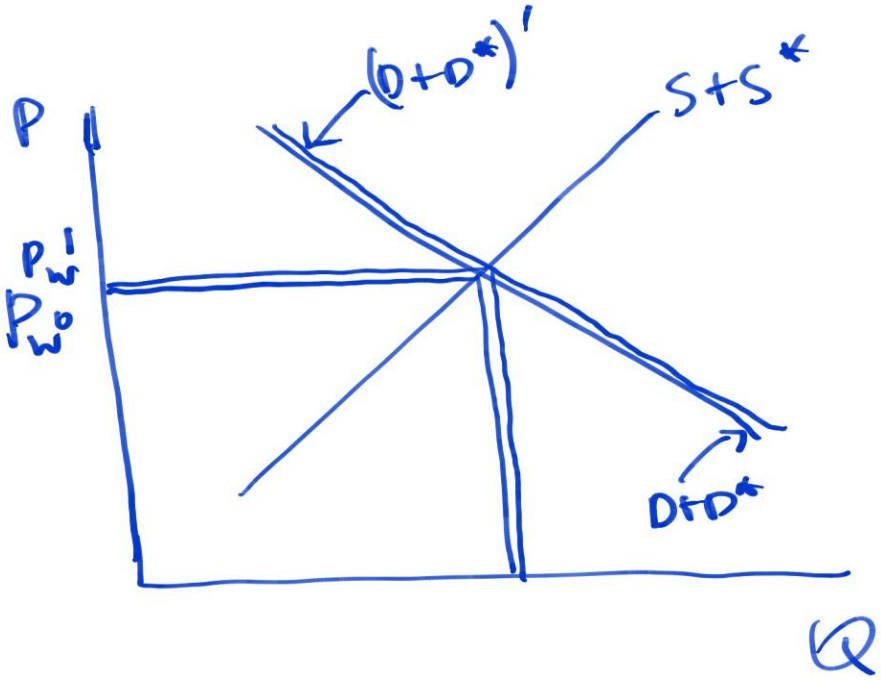
The diagrams on the left and right show the demand and supply curves in the domestic country, and the foreign country, respectively. At the autarkic prices P_a, and p_a^* in both diagrams, the demand for imports in the home country (equal to the difference between D and S) and the supply of exports in the foreign country (equal to the difference between $S^* \; and \; D^*$) are equal to zero. For prices below P_a import demand (MD) in the home country is positive, whereas for prices above p_a^* export supply (XS*) is positive in the foreign country. These schedules are depicted in the middle diagram, and the equilibrium world price P_W is where the two schedules intersect.

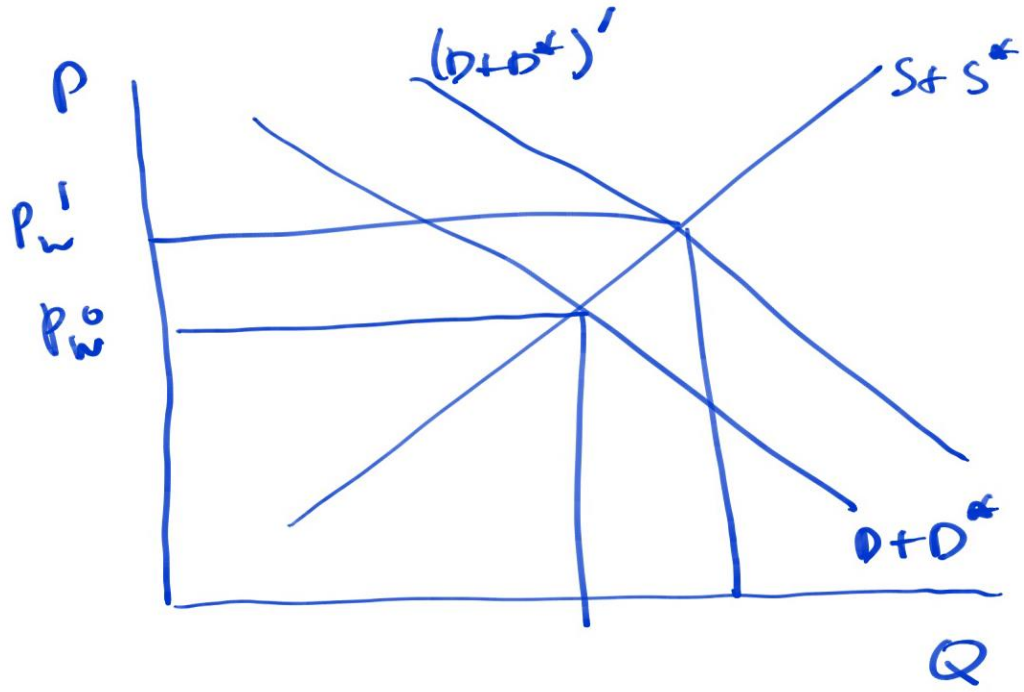
In the case that the domestic country is too small relative to the foreign country (i.e. the rest of the world, ROW), the foreign export supply curve is horizontal at the world price.

Understanding the Influence of Country Size

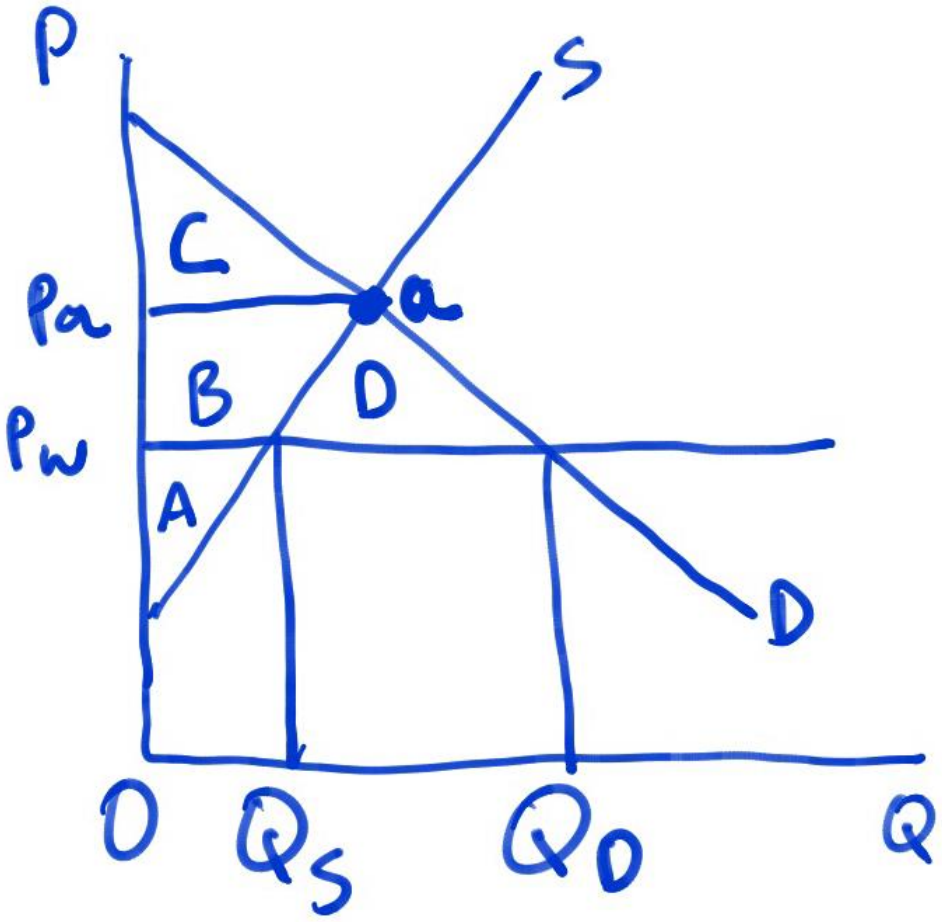
Small Country: Diagram on the left shows the case of a world economy consisting of two countries: the domestic economy and the rest of the world (ROW, denoted by *). World equilibrium requires that D+D*=S+S*. This equilibrium obtains at point **a** in the diagram. Assume now that the domestic economy is small relative to the ROW in the consumption and/or production of a good. Then, if, for whatever reason, there is an exogenous increase in the demand for the particular good in the domestic economy (say, the demand for coffee in Greece), the influence on the position of the D+D* would be very small, and so the influence on the world price of the good would be nearly zero. In other words, the small domestic economy can consider that the world price is not affected by its actions, i.e. it can import or export the good at this world price without affecting it.

Large Country: Diagram on the right shows the case of a large country in the consumption of a particular good (e.g. China). If, for whatever exogenous reason (e.g. an increased preference for consuming the particular good) there is an increased demand for the good in China, there will be a noticeable upward shift in D+D*, and thus on the world price of the good. In other words, the domestic economy can **not ignore** the influence of **its** actions on the world price of the good.





The Benefits of Free Trade (small country under perfect competition)



Under autarky the domestic price, P_a, is determined by the intersection of (domestic) supply and demand schedules at point **a.** Consumer Surplus (CS) is equal to (area) C. Producer Surplus (PS) is equal to A+B. Social Welfare (SW), which is equal to the sum of CS and PS, is equal to A+B+C.

With Free Trade (FT), the small country can buy from abroad at a fixed world price, P_W. At this price, domestic demand expands to Q_D, while domestic supply contracts to Q_S. As a result, imports are now equal to Q_D Q_S. CS expands and is equal to B+C+D, whereas PS contracts and is equal to A. As a result SW is now equal to A+B+C+D. Thus, in comparison with autarky, FT increases SW by D. This is the gain from FT.

Note, however, that FT involves losses for producers (equal to B), whereas the gains to consumers (equal to B+D) are larger than the losses to producers.

It is easy to see that a drop in P_W would increase CS by more than it would reduce PS (since consumption is bigger than production), and thus increase SW.

Benefits of FT for Exporters (small country under perfect competition)

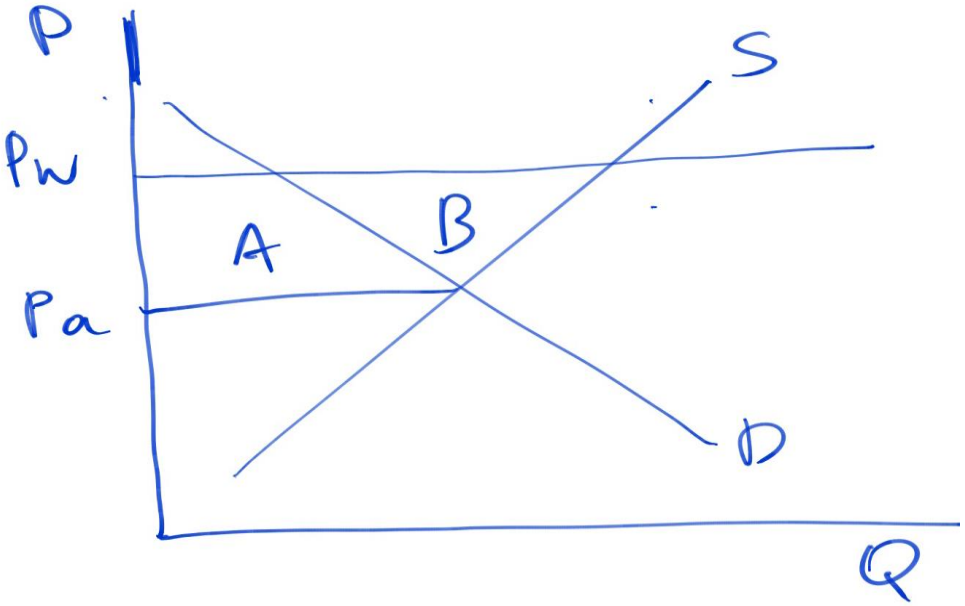
LEFT DIAGRAM

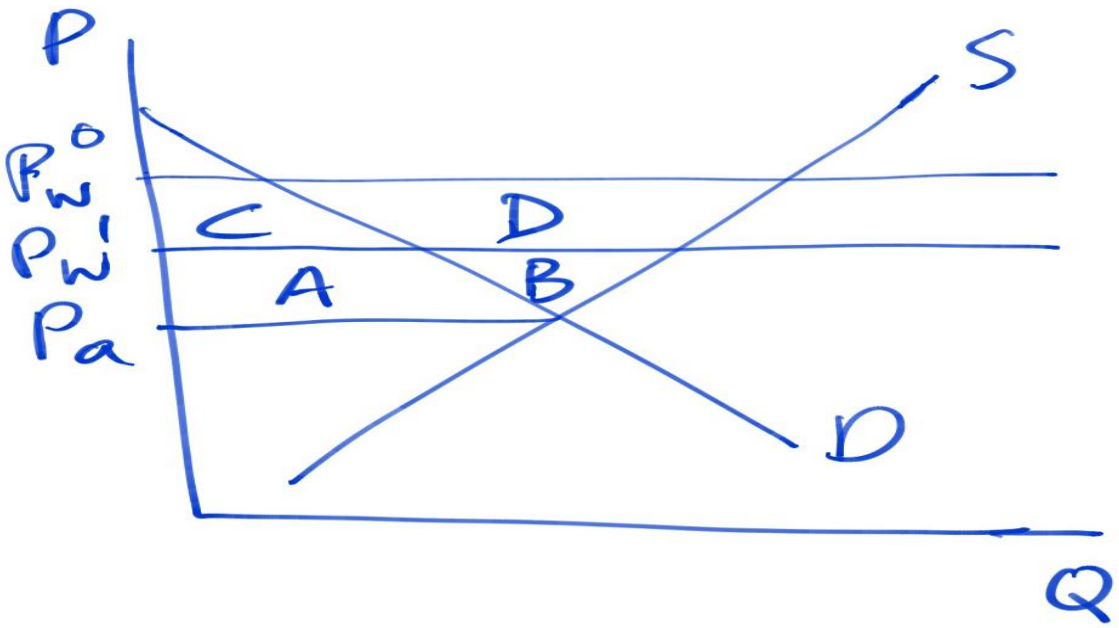
At point **a**, domestic demand is equal to domestic supply for a good. Since now the world price is above the domestic price under autarky, the country exports the good. With FT, domestic production expands and domestic consumption contracts. As a result, CS falls by A, PS rises by A+B, and SW increases by B.

Effects of a Reduction in the World Price (small country under perfect competition)

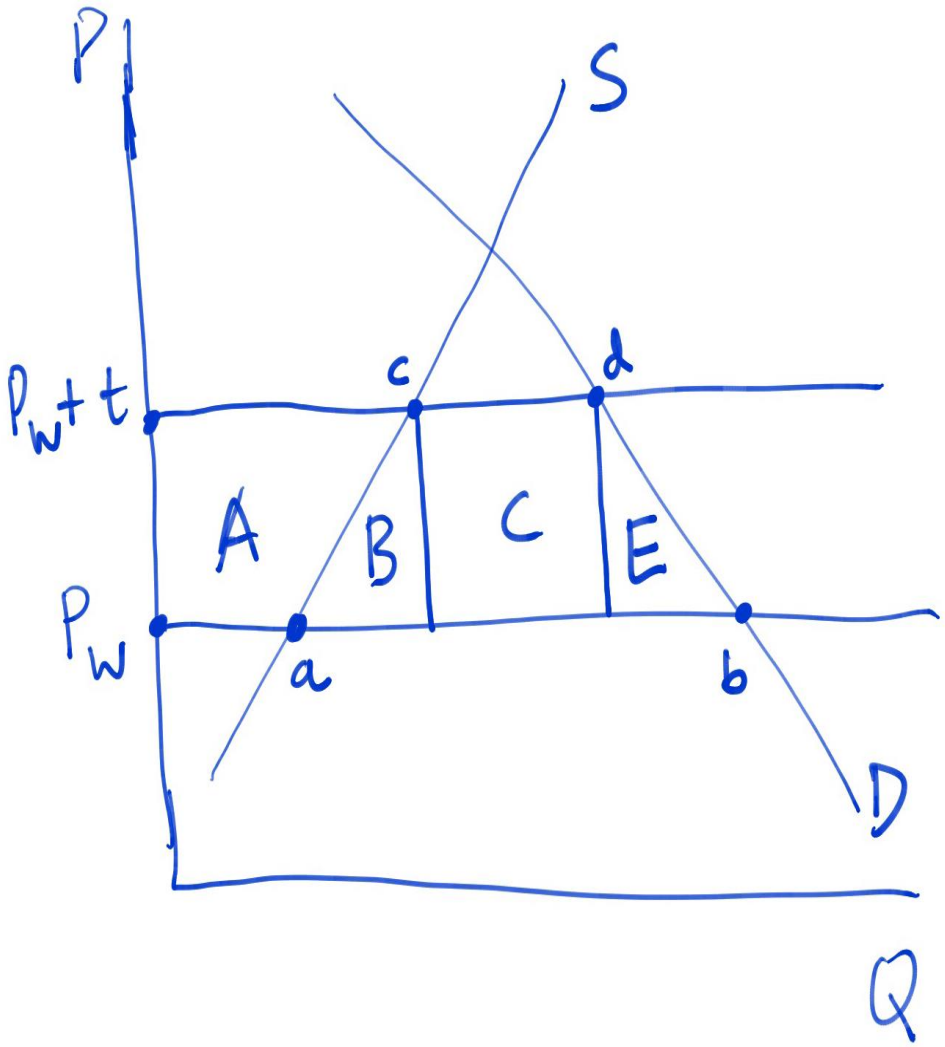
RIGHT DIAGRAM

Starting from world price P_w^0, an exogenous drop in world price to P_w^1, results in an increase in consumption, decrease in production, and a reduction in exports. Consumers gain (CS rises) C, producers lose (PS falls) C+D, and SW falls by D. Thus, a drop in the world price reduces welfare for the country exporting this good.





The Effects of Tariffs (small country, perfect competition)

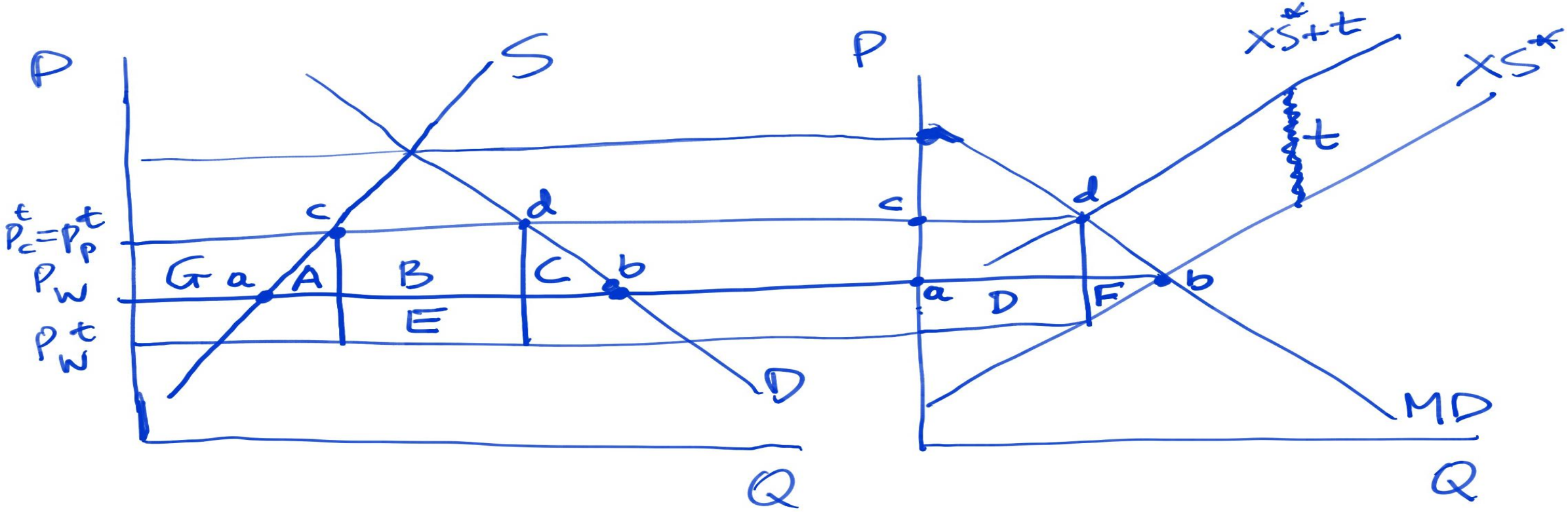


At the initial world price, P_W, imports are equal to **ab**. The imposition of a tariff, **t**, per unit, raises the domestic price for both consumers and producers to P_W+t, expands domestic production and decreases domestic consumption, thus reducing imports to **cd**. As a result CS falls by A+B+C+E, PS increases by A, while the government collects tax (tariff) revenue equal to C. Thus the change in SW is equal to Δ(CS) + Δ(PS) +Δ(TR) = -(A+B+C+E)+A+C= -(B+E), thus SW declines after the imposition of a tariff.

As is usually the case, the policy change involves winners and losers. Note that since the number of producers is smaller than the number of consumers, it may be impossible (due to the "collective action" problem) for the consumers to exercise effective political opposition to the imposition of the tariff.

Important Note: The imposition of a tariff by a small country does not influence the price paid by the *country and* received by ROW producers.

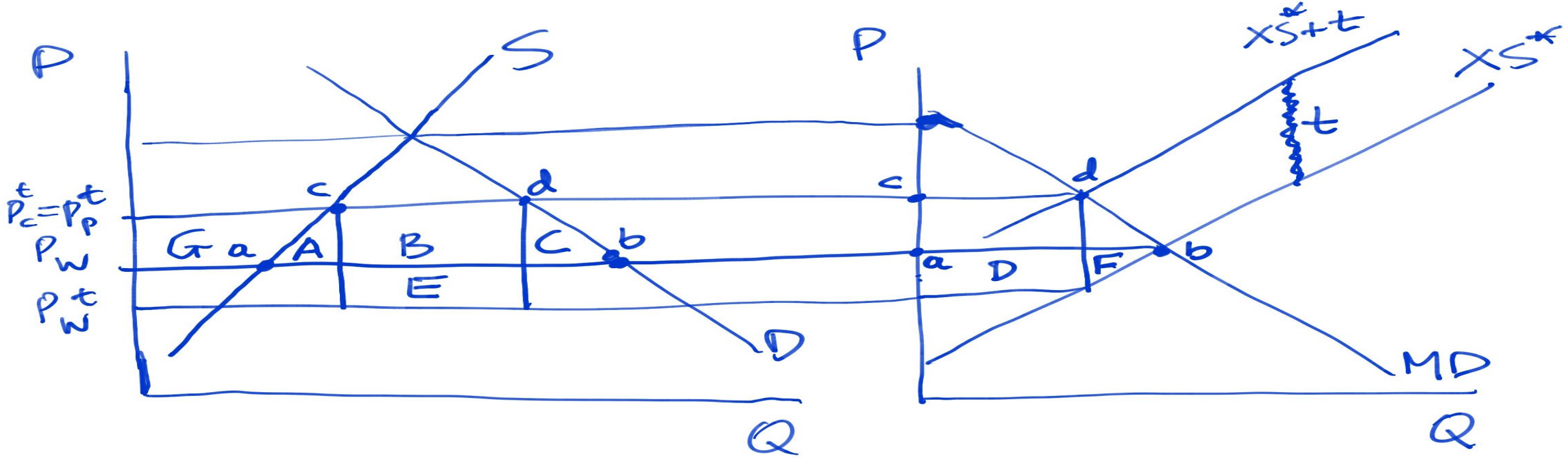
The Effects of Tariffs in the Large Country Case. Diagrams below show the case of a large country imposing a tariff. The price on the vertical axis measures the price paid by domestic consumers (and received by domestic producers as well). The imposition of a tariff, **t**, by the domestic country will shift the XS* curve to the XS*+t curve. As a result, the world price received by producers drops to P_W^t, which is also the price received by the ROW producers. The price paid by domestic consumers rises to P_W^t+t= P_c^t, which is also the price received by the **domestic** producers, P_p^t. Imports decline from ab to cd (in both diagrams). The changes in domestic country are as follows: Δ(CS)=-(G+A+B+C), Δ(PS)=G, Δ(TR)=B+E, thus Δ(SW)= E-A-C. If the tariff is chosen optimally, then E-A-C>0, thus a tariff increases social welfare for the domestic country. It also decreases SW for the other country (see next page)…



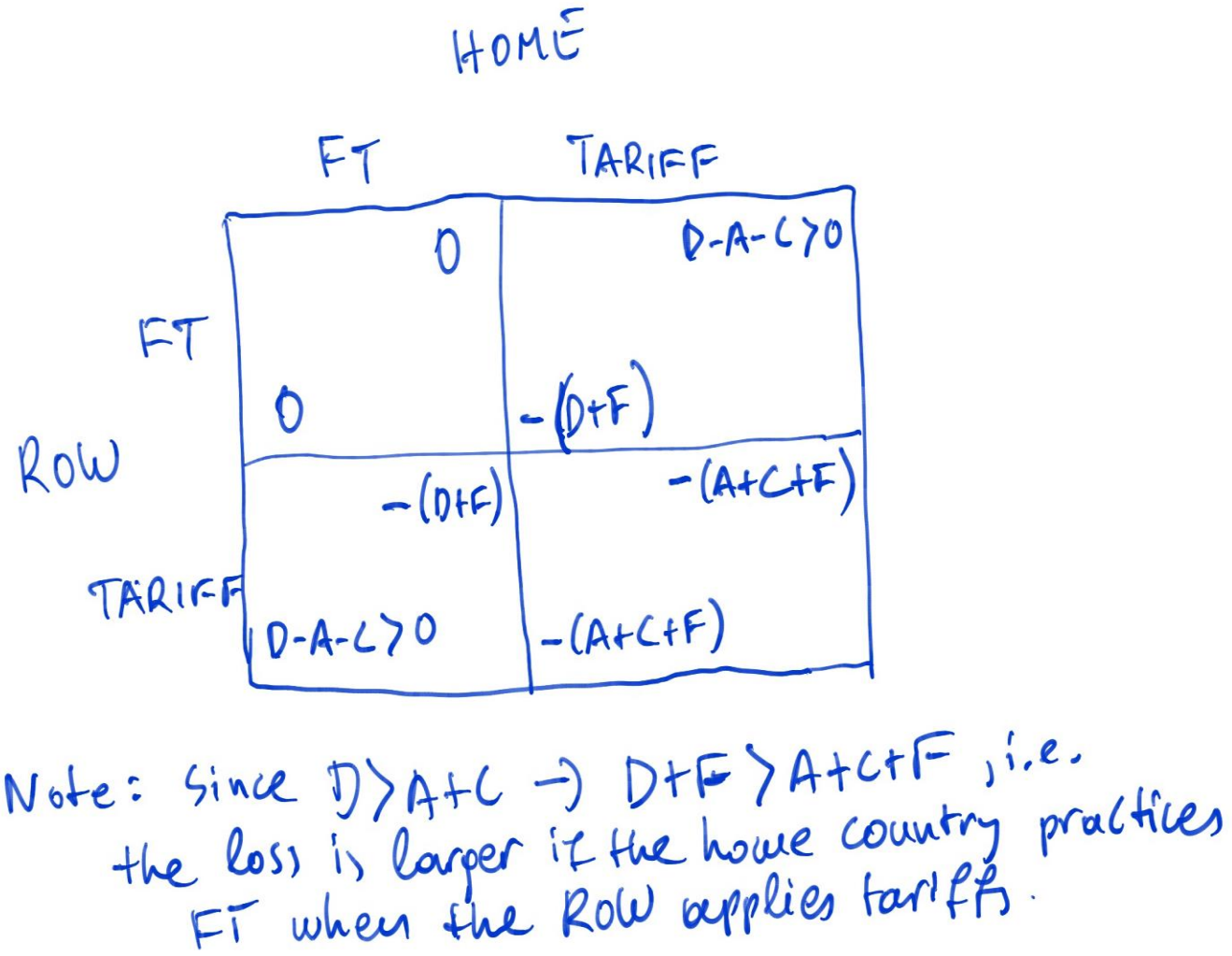
The Effects of Tariffs in the Large Country Case (continued…) Since the price received by ROW producers drops, the loss of SW in the ROW is equal to D+F. Thus, the domestic country gains E-A-C, whereas the foreign country loses D+F. Note that, by construction, distance ab in the left diagram is equal to distance ab in the right diagram. (The same holds true for distance cd.) This implies that E=D. Thus, the change in SW for the world as a whole is E-A-C-E-F=-(A+C+F), i.e. there is a reduction in world welfare (since the domestic country gains less than what the ROW loses).

NOTE 1: THE LARGER IS THE DOMESTIC COUNTRY, THE LARGER WILL BE THE OPTIMAL TARIFF FOR IT, AND AS A RESULT, THE LARGER WILL BE THE LOSS FOR THE ROW, AND THE WORLD ECONOMY.

NOTE 2: IF BOTH THE DOMESTIC COUNTRY AND THE ROW IMPOSE TARIFFS ON THE OTHER'S EXPORTS, THE LOSS OF EACH COUNTRY'S WELFARE IS EQUAL TO (E-A-C) {I.E. WHAT THE COUNTRY GAINS FROM IMPOSING THE TARIFF} MINUS (D+F) {I.E. WHAT THE COUNTRY LOSES FROM THE IMPOSITION OF THE TARIFF BY THE OTHER COUNTRY}, THUS. UNDER SYMMETRY. EACH COUNTRY LOSES -(A+C+F). AND THE WHOLE WORLD LOSES -2(A+C+F).



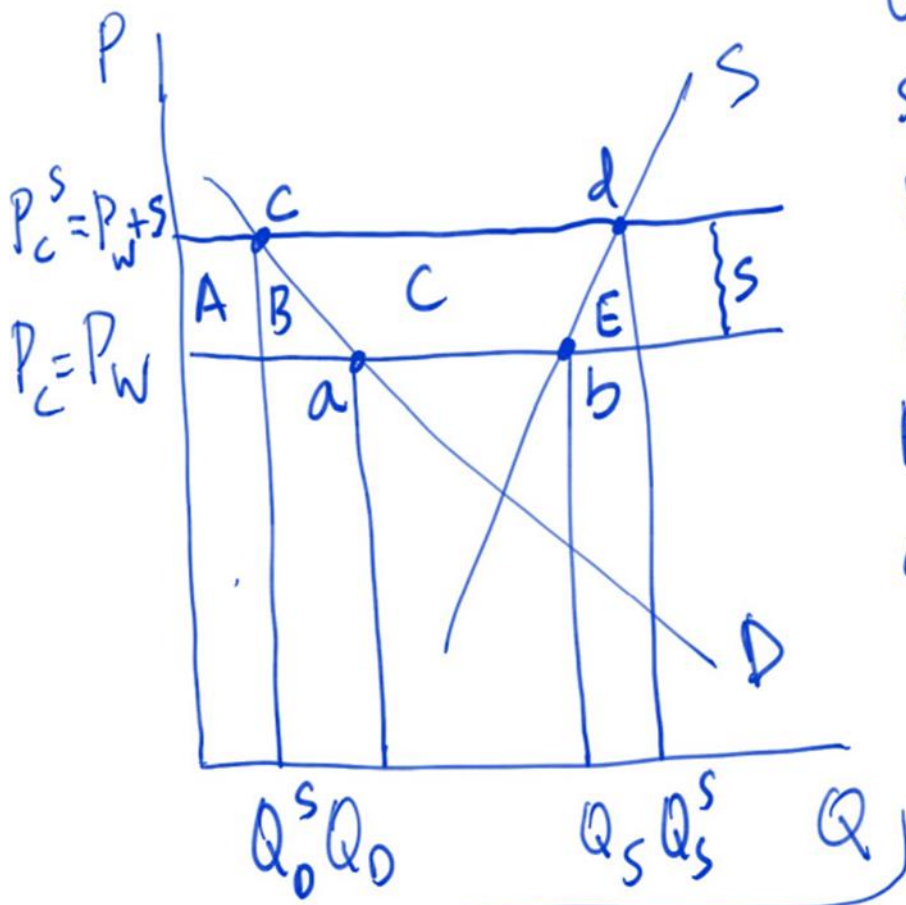
The Inevitability of Trade Restrictions



The payoff matrix depicts the effects on SW discussed on the previous slide (the top right entries are for the home country and the bottom left for the ROW). It is obvious that although the best outcome for the world is for both countries to practice FT, each country's best strategy is to impose a tariff independently of what the other country does. Consider, e.g. the home country. Its policymakers think: If the ROW doesn't impose a tariff, then the best for me is to impose one since D-A-C>0. If the ROW imposes a tariff, then again it is best for the home country to impose one, since D+F >A+C+F. The same thinking applies for the ROW as well. Thus each country has a **dominant strategy,** which is to impose a tariff . As a result, absent coordination, the outcome of the game is the bottom right quadrant (Tariff, Tariff), and each country loses A+C+F, which is worse than the (FT, FT) outcome.

The successive rounds of GATT agreements (and the establishment of the WTO) can be understood as a way to circumvent the un-coordinated sub-optimal outcome of (Tariff, Tariff).

Export Subsidies: Perfect Competition, Small Country



Granting an export subsidy of S per unit, implies that domestic prices will rise to $P_C^S = P_W + S$, domestic demand will fall and domestic supply will expand. Exports will increase from ab to cd. As a result, $\Delta(CS) = -(A+B)$, $\Delta(PS) = A+B+C$, $\Delta(TR) = -(B+C+E)$, $\Delta(SW) = -(B+E)$.

We thus conclude that export subsidies by a small country benefit domestic producers, but hurt domestic consumers, and – since they also generate an expense for the government – reduce SW.

The same is true if a large country gives export subsidies. The loss in SW will be even bigger in this case since it will result in a drop in the world price, thus having the domestic country inadvertently subsidizing foreign consumers (i.e. we pay taxes in order to subsidize foreign consumers).

These results may not hold in the case of imperfect competition.

Types of International Economic Integration

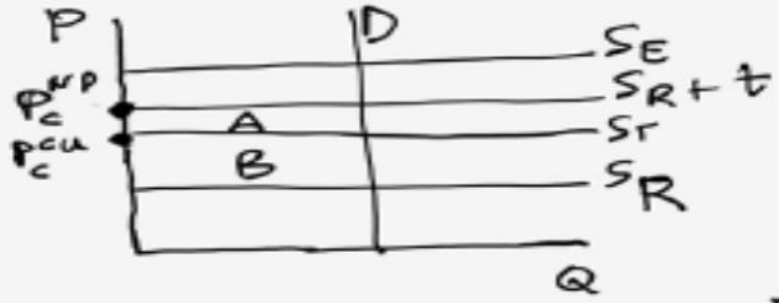
- About 90% of existing Regional Trade Agreements (RTAs) are Free Trade Areas
- The EU is the only one that comes close to being an Economic Union

Levels of economic integration	*Free Trade Area*	*Customs Union*	*Common Market*	*Economic Union*
Removal of trade restrictions between member states	✓	✓	✓	✓
Common external trade policy towards non-members		✓	✓	✓
Free movement of factors of production between member states			✓	✓
Harmonization of economic policies under supra-national control				✓

The Effects of Customs Unions

PERFECTLY ELASTIC SUPPLY CURVES, >> INELASTIC DEMAND CURVE.

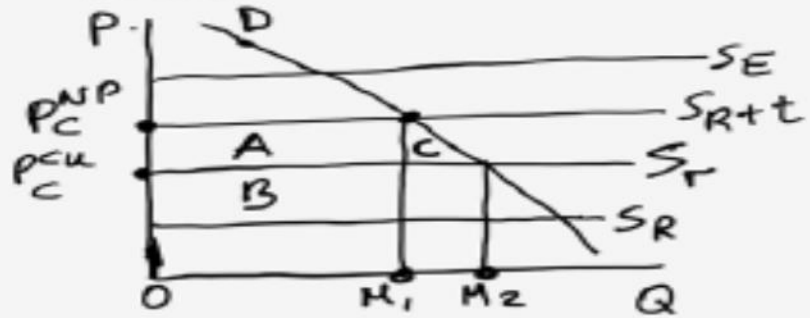
Greece (E) engages in a customs union (CU) with Germany (T). Rest of the world (R). Before the CU, under the non-preferential tariff rate (t) all imports come from R, and the



consumer price in Greece is P_c^{NP}. After the CU between E and T, all imports come from T, and the consumer price is P_c^{CU}. Rise of CS in Greece by (area) A, loss of tariff revenue (TR) by A+B. Net loss of social welfare (SW) = B.

The loss in SW is due to the fact that the country after the CU buys the good at a higher price. In other words, we have trade diversion.

PRICE-RESPONSIVE DEMAND



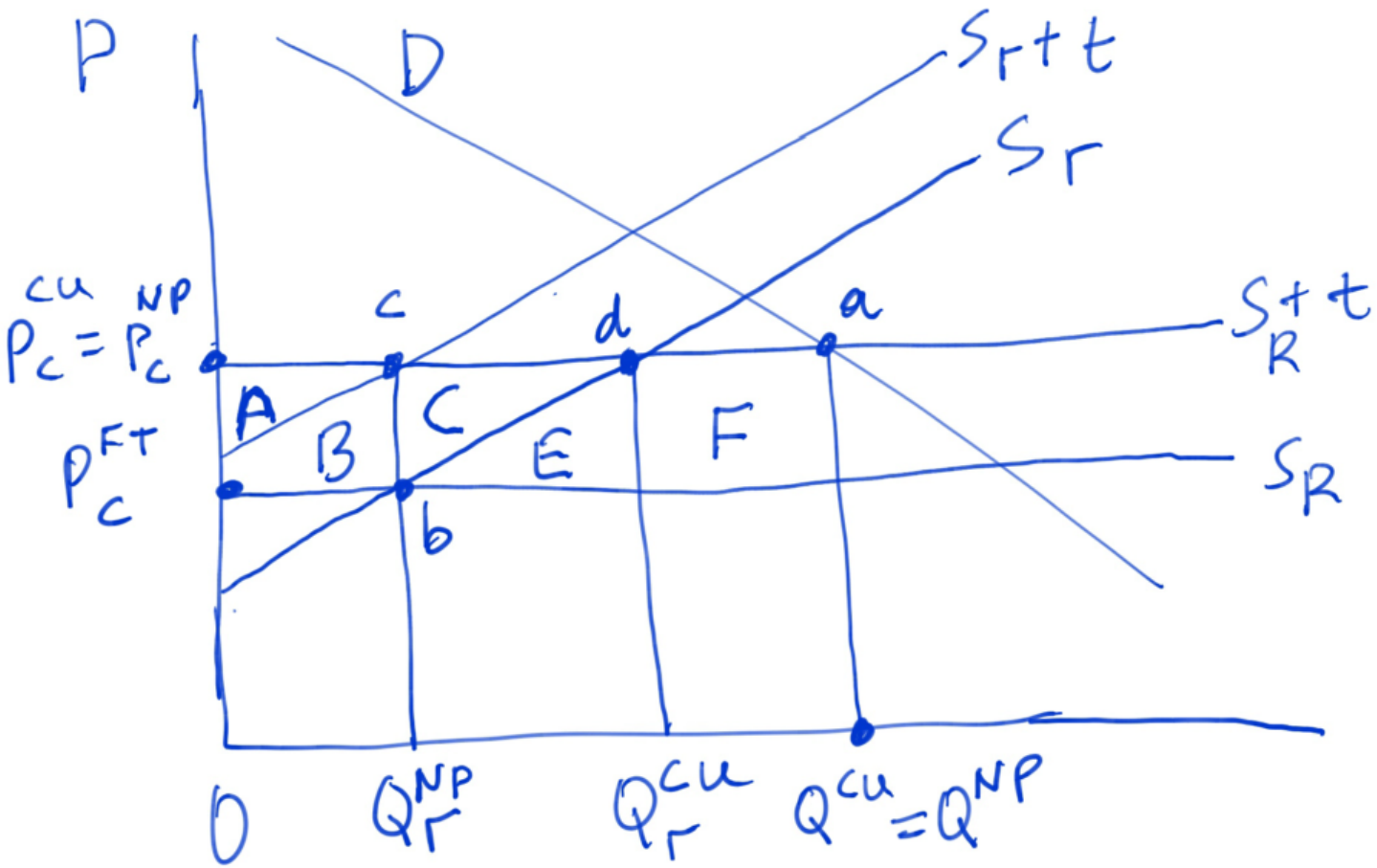
Before the CU, the consumer price in Greece is P_c^{NP}, and it drops to P_c^{CU} after the CU. Quantity imported rises from OM_1 to OM_2, CS rises by A+C, TR drop by A+B, and the net effect on welfare is C-B.

The presence of (area) C is due to the expansion of trade (i.e. imports). The fact that trade expands is called <u>trade creation</u>. So, in this case, with both trade diversion and trade creation being present, the net effect (C - B) on domestic welfare is ambiguous and depends, among other things, on the difference in costs between Γ and R, and the price elasticity of the demand curve.

- The previous two diagrams imply that both before, and after, the formation of the CU, the country (Greece) is importing from only one source (ROW, in the case of non-preferential trade; Germany, after the CU). Since this is unrealistic, in the next slide we present the case that the country is importing both before, and after, from both sources. To do that we assume that at least one of the exporting countries' supply curves is not perfectly elastic.

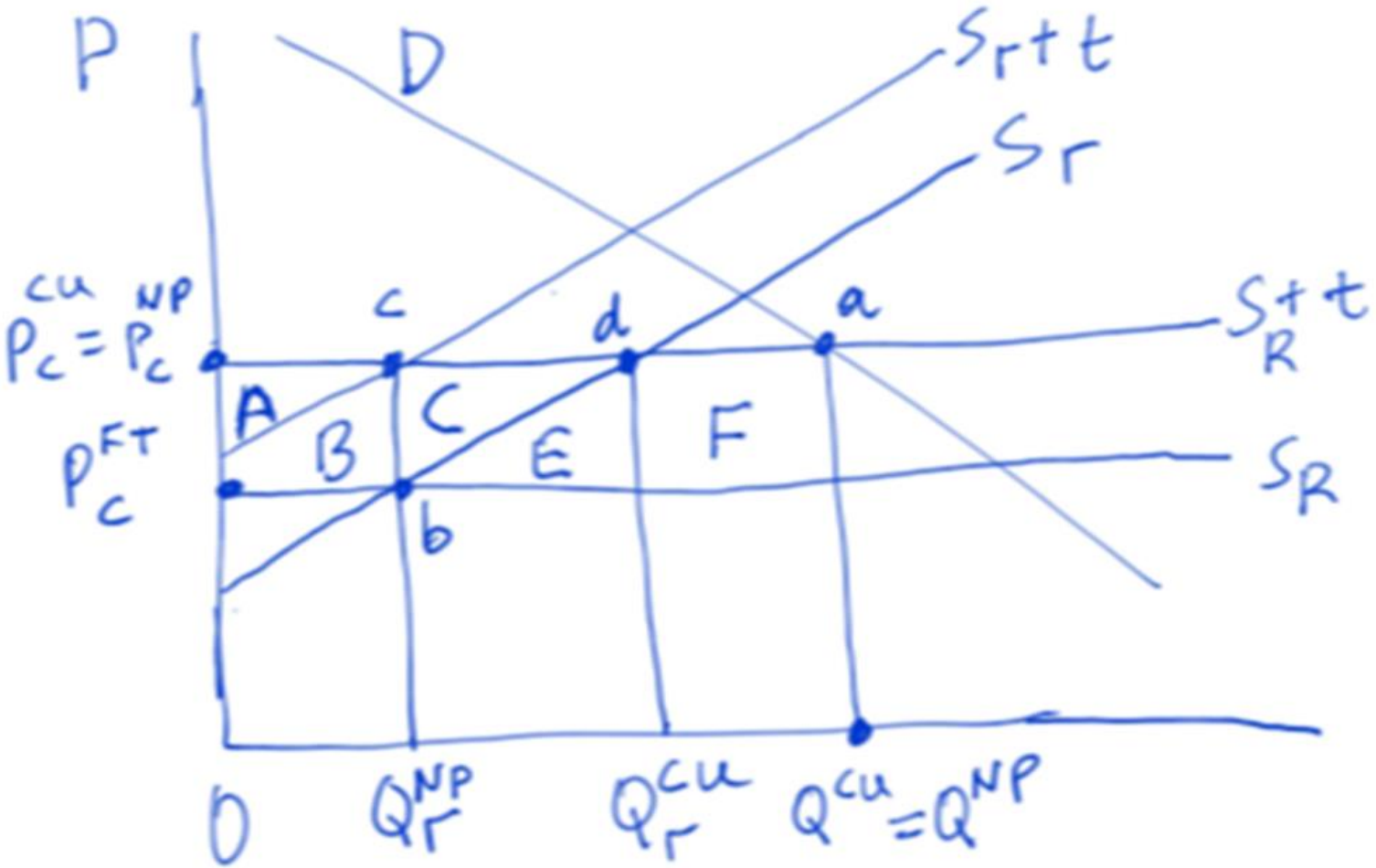
Effects of CU when Imports are Sourced from both Countries

Diagram shows the case of a country which sources its imports from two countries, Γ and R, and there is a non-preferential (NP) tariff, t , on imports from both countries. D is the country's (Greece) import demand curve. Initially, with the NP tariff in place, the price for domestic consumers is $P^{NP}{}_{C}$, and total imports are



equal to Q^{NP} , of which $OQ_\Gamma{}^{NP}$ are sourced from Γ (Γ supplies up to point **c**), and the rest (**ca**) from R. If E and Γ form a CU, then Γ can supply up to point **d** at a lower cost than R, and thus Germany's exports increase by **cd**, while R's exports are reduced by the same amount. Note that since the price to the consumers remains the same, total imports remain the same as well. What are the effects on Greece's SW?

Since prices and total imports remain the same (point a), there is no change in either CS or PS. However, there is a change in tariff revenue. Before the CU, tariff revenue were equal to (areas) A+B+C+E+F (since tariffs were applied on imports on R **and** on Γ. After the CU, tariffs are applied only on imports sourced from R, and so tariff revenue



are now equal to F. So Greece experience a drop in SW equal to A+B+C+E. This is because for imports up to point **d,** pays a higher price than before to import the good from Germany, i.e. before it was paying a price $P^{FT}{}_C$ whereas after the CU pays $P^{NP}{}_C$. This is the so-called ***Revenue Transfer Effect***. (As a result, Γ's PS increases by A+B+C; this is also the increase in SW for Γ. Thus, as a whole the CU loses E, with Greece losing more than what Γ gains. Note that this is not the only possible outcome.