

PubPol/Econ 541

Class 19

Preferential Trading Arrangements

by

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University of Michigan

2023

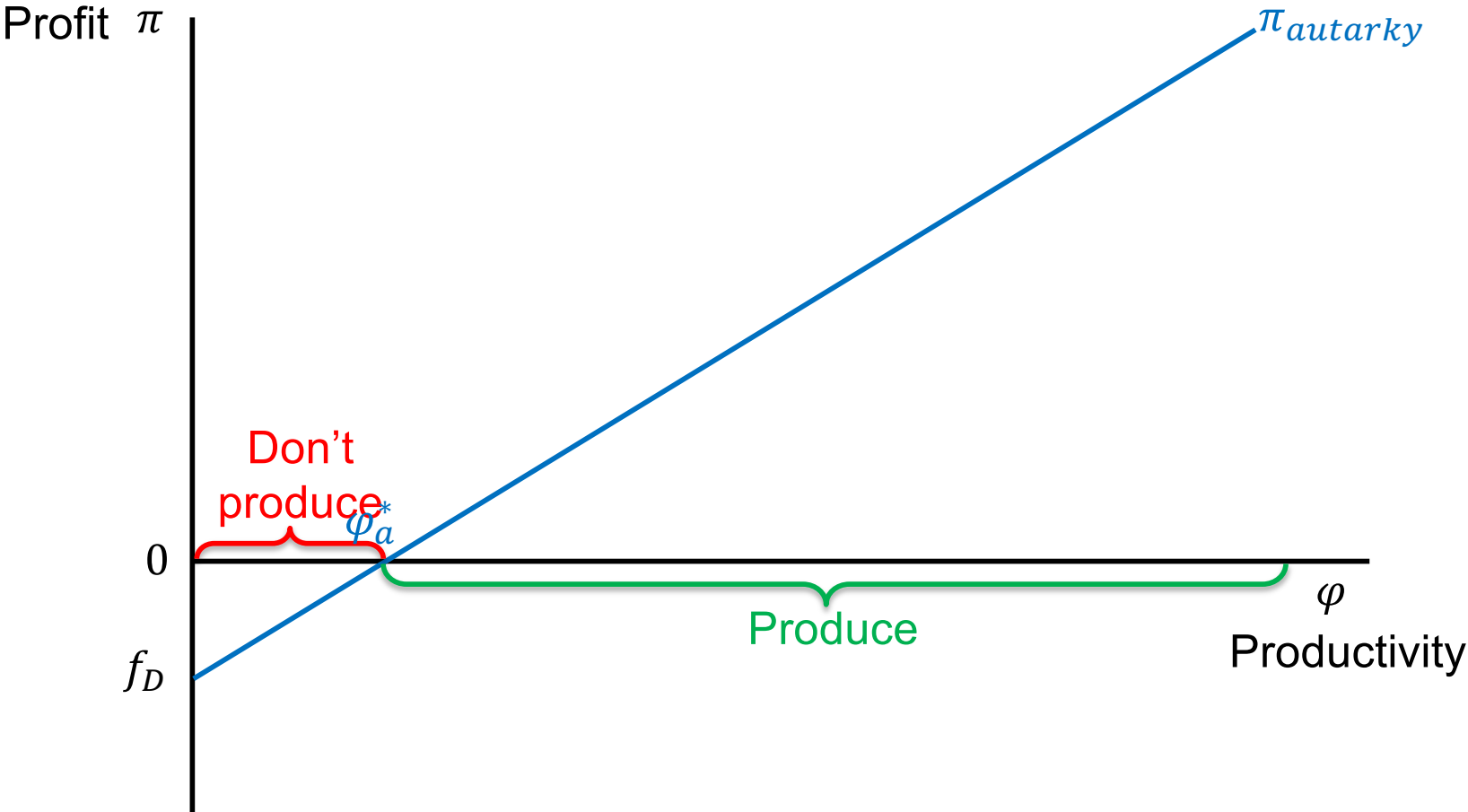
Left-over from last time:

Heterogeneous Firms

- Sketch of the Melitz model:
 - π = profit (revenue – variable cost – fixed cost)
 - φ = random productivity
 - Higher φ means
 - Lower marginal cost
 - Lower price
 - Greater sales
 - More variable profit (revenue minus variable cost)
 - f_D = fixed cost of production & domestic sales
 - f_X = fixed cost of exports

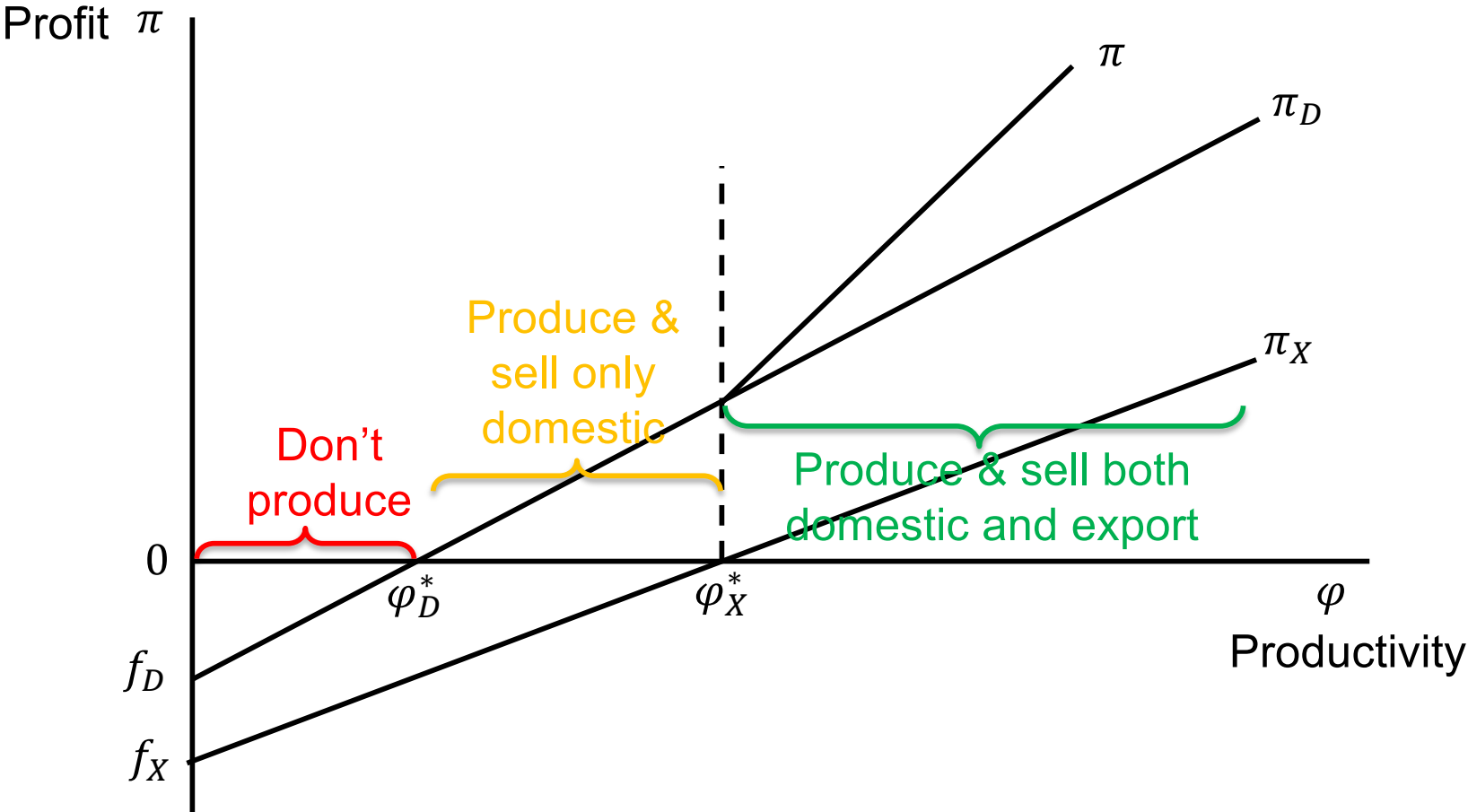
Left-over from last time:

Equilibrium in Autarky



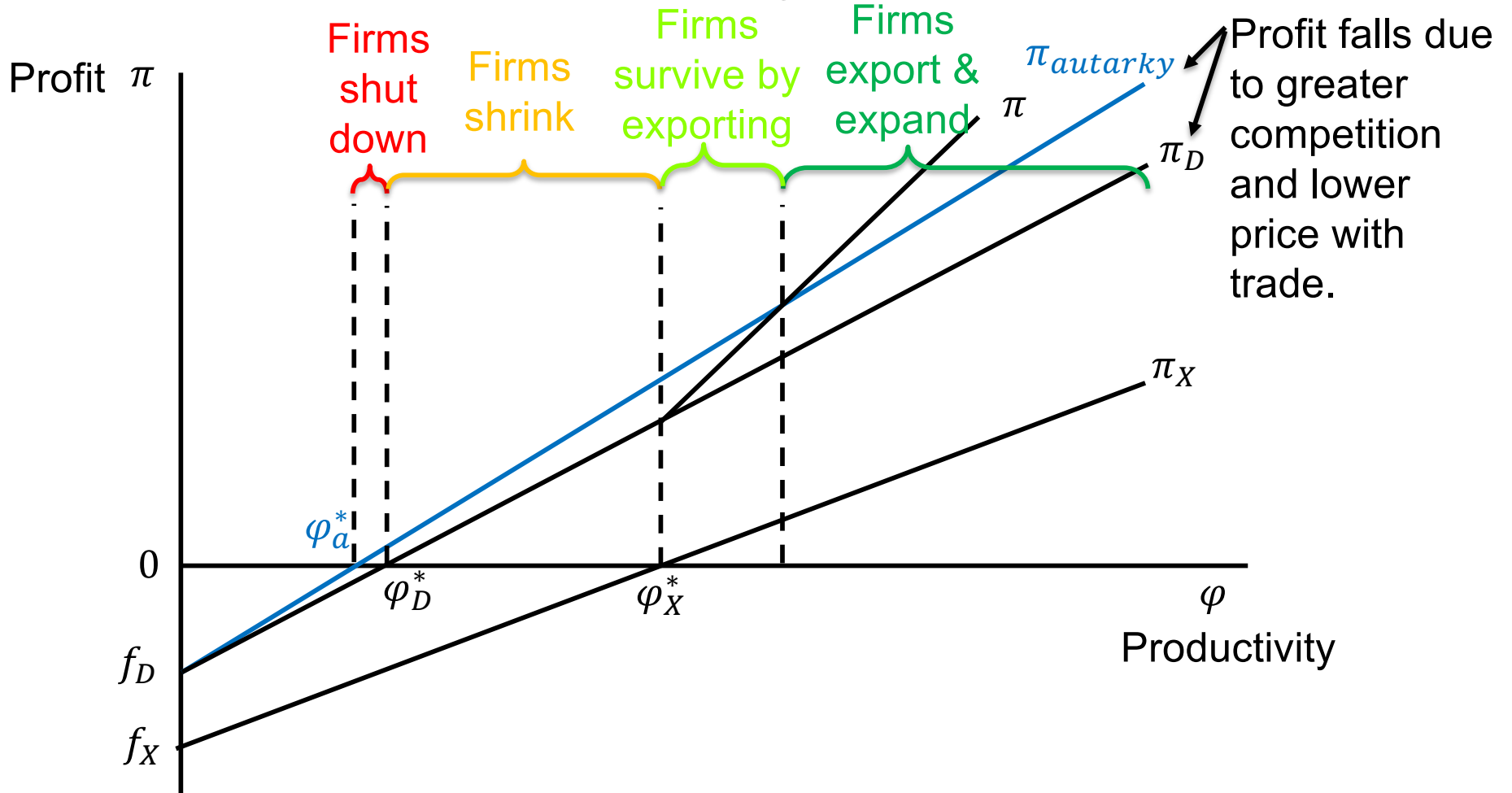
Left-over from last time:

Equilibrium with Trade



Left-over from last time:

Move Autarky to Trade



Left-over from last time:

Pause for Discussion

Left-over from last time:

Questions (not asked before)

- It seems obvious that firms differ. Why was that not allowed with perfect competition?
- Explain the new source of gain from trade that the heterogeneous firm model introduces?

Papers

- Paper #2 was due today
- Paper #3
 - Will be due December 6, the last day of class
 - Note that you will be selecting your own topic for this
 - Confer with your group soon to discuss what topic you will select
 - Suggestion: Select a simple topic, similar to what you've done in papers #1-2
 - Feel free to consult me about your topic ideas
 - By email
 - Or ask for group zoom meeting with me

Outline

- Background on PTAs
- Simplest model: horizontal supplies
- Upward-sloping supplies
 - 3-country case, in graphs
 - Somewhat more general case, in equations
 - 4-country case, in graphs (probably omit)
- Are FTAs Beneficial?

Outline

- **Background on PTAs**
- Simplest model: horizontal supplies
- Upward-sloping supplies
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- Are FTAs Beneficial?

Background

- A Preferential Trading Arrangement (PTA)
 - Exists when a country uses a lower tariff on one country than on another
- Examples
 - Free Trade Agreements and Customs Unions
 - Zero tariff on (almost) all goods from partner country (ies)
 - Generalized System of Preferences (GSP)
 - Lower than WTO MFN tariffs on some exports of selected developing countries
 - ADD, CVD
 - High tariff on only target country (ies)
 - (Not Safeguards tariffs, which must apply to all)

Background

- A PTA is not the same as lowering a tariff on imports from all countries
- Reason: There is both...
 - ... “Trade creation”
 - Increased imports from the favored partner instead of buying from domestic producers
 - ... “Trade diversion”
 - Switch to import from favored partner instead of from another country (“third country”)

Background

- Viner's (1950) trade creation and trade diversion are usually illustrated with
 - Constant costs
 - 2-country FTA or CU plus rest of world
- Then we'll look at cases with
 - Upward sloping supplies
 - And in the last case, an FTA when there is another pre-existing FTA

Pause for Discussion

Questions on KOM

- Why does the text say that the GATT permission for countries to form FTAs is a “rather strange exception”?
- Why do members of a customs union “cede part of their national sovereignty to a supranational entity”?
- Why are rules of origin needed in a Free Trade Agreement but not in a Customs Union?

Outline

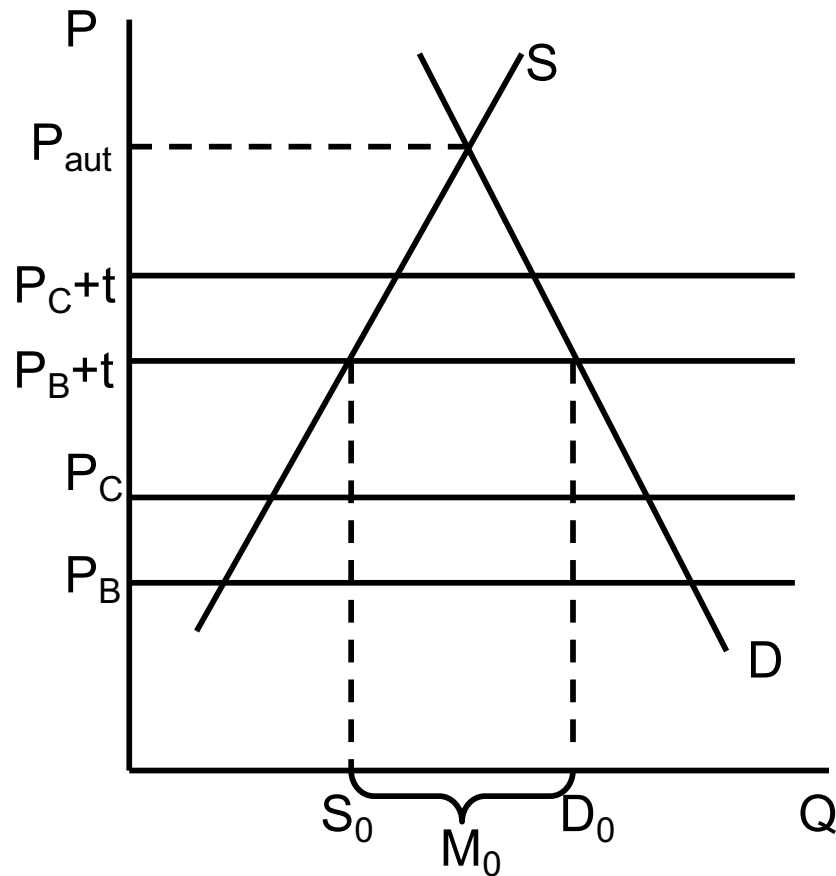
- Background
- **Simplest model: horizontal supplies**
- Upward-sloping supplies
 - 3-country case, in graphs
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- Are FTAs Beneficial?

Simplest Model

- Assume
 - Partial-equilibrium model of trade in a good
 - All the same assumptions we've used before for tariffs
 - 3 countries:
 - Home, A
 - Potential Partner 1, B, and
 - Potential Partner 2, C
 - B and C have constant costs of exporting to A, at prices $P_B < P_C$
 - A initially has tariff, t , on both B and C, $t > P_C - P_B$

No FTA

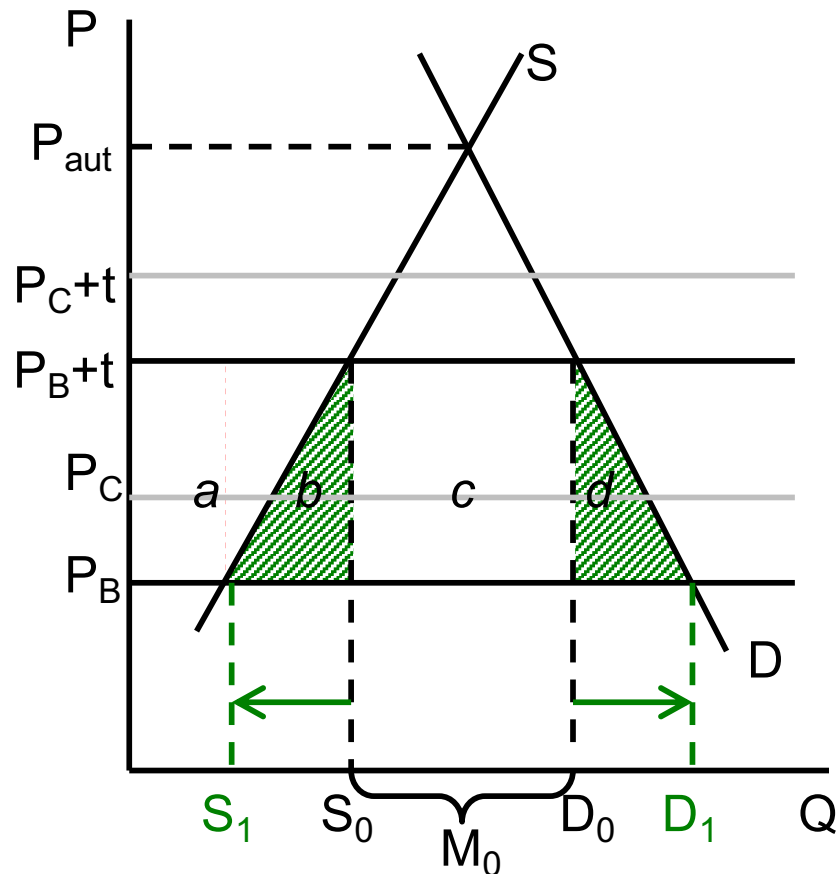
Home Country A



- Without FTA
 - Since $P_B+t < P_C+t$ Home imports only from B

FTA with low-cost country, B

Home Country A



FTA with B

- Since $P_B < P_C+t$ Home still imports only from B
- Country C plays no role

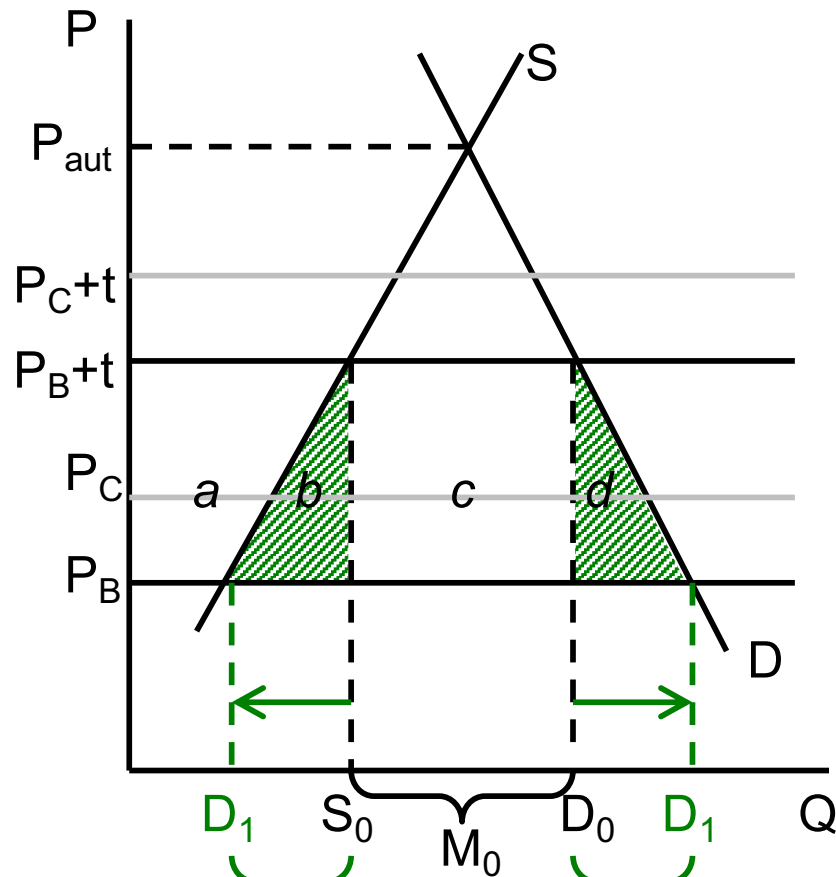
Welfare

Suppliers lose	$-a$
Demanders gain	$+(a+b+c+d)$
Government loses	$-c$
<hr/>	
Country gains	$+(b+d)$

Same as Free Trade

FTA with low-cost country, B

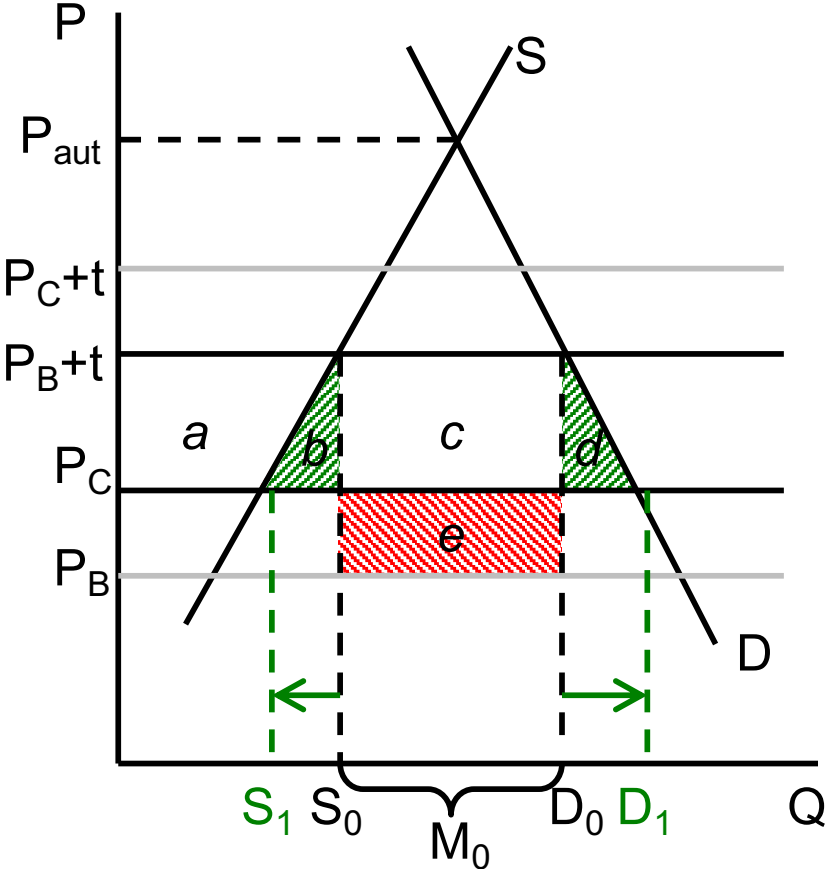
Home Country A



Trade Creation

FTA with high-cost country, C

Home Country A



FTA with C

- Since $P_C < P_B+t$ Home now imports only from C

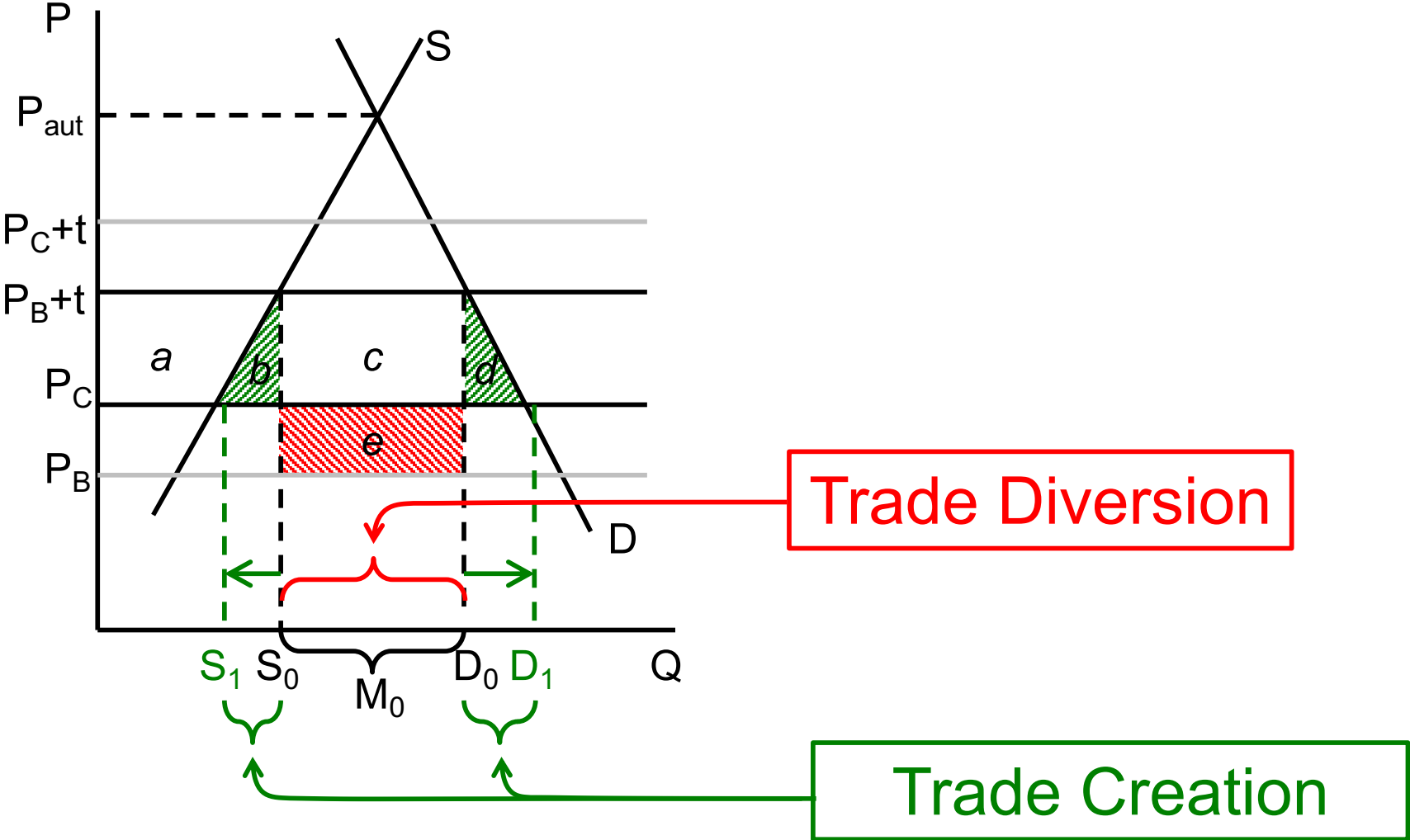
Welfare

Suppliers lose	-a
Demanders gain	+(a+b+c+d)
Government loses	-(c+e)
<hr/>	
Country:	-e+(b+d)

Not same as Free Trade
and may be a loss, if
 $e > (b+d)$

FTA with high-cost country, C

Home Country A



Pause for Discussion

Questions

On KOM:

- If consumers in an FTA buy imports from their FTA partner rather than a non-member due to their paying a lower price, how can that be harmful for the country?

On WTO:

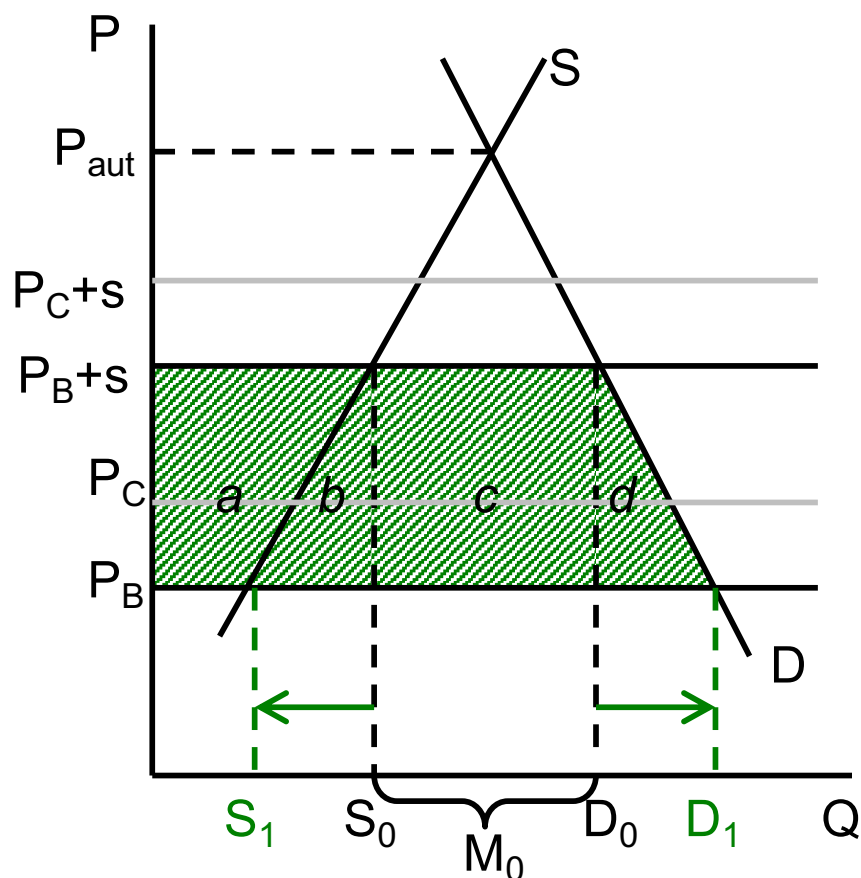
- The examples show only trade creation if the PTA is with the low-cost country. Should countries therefore only form PTAs with low-cost countries?

Trade in Services

- Trade in a service is not subject to tariffs, since nothing physical crosses borders
- It is subject to regulatory standards, which also raise cost, by some amount, say “s”.
- Assume that FTA removes this cost through
 - Harmonization of standards, or
 - Mutual recognition
- The difference is that
 - Tariff t is revenue to government
 - Regulatory cost s is a real cost, using real resources, and not a transfer or benefit to anyone
- Pictures look the same as before, except for interpretation of this cost.

Service FTA with low-cost, B

Home Country A



FTA with B

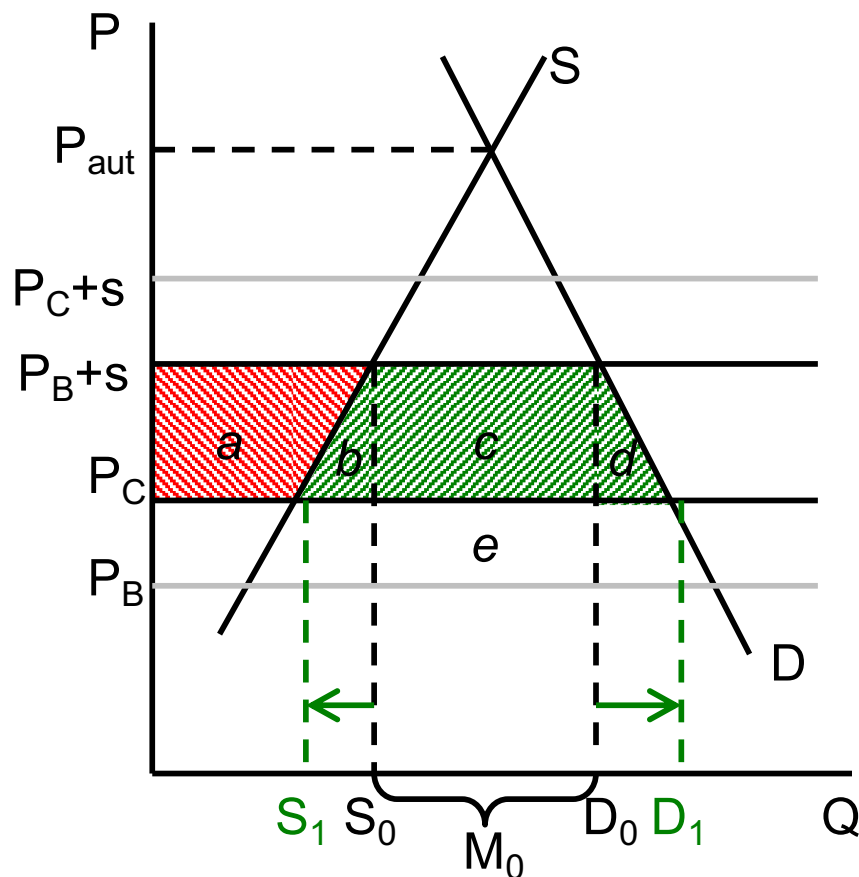
- Since $P_B < P_C+s$ Home still imports only from B
- Country C plays no role

Welfare

Suppliers lose	$-a$
Demanders gain	$+(a+b+c+d)$
Government loses	0
<hr/>	
Country gains	$+(b+c+d)$

Service FTA with high-cost, C

Home Country A



FTA with C

- Since $P_C < P_B+s$ Home now imports only from C

Welfare

Suppliers lose	-a
Demanders gain	+(a+b+c+d)
Government loses	0
<hr/>	
Country gains	+(b+c+d)

Certain gain, but not as large as with country B

Pause for Discussion

Questions on WTO, “Causes and Effects of PTAs”

- What is the main difference between the effects of a PTA in goods and one in services?

Outline

- Background
- Simplest model: horizontal supplies
- **Upward-sloping supplies**
 - 3-country case, in graphs
 - Somewhat more general case, in equations
 - 4-country case, in graphs
- Are FTAs Beneficial?

Upward-sloping Supplies

3-country case*

- Assume
 - Partial-equilibrium model of trade in a good
 - All the same assumptions we've used before for tariffs
 - Three countries, one importer A, and two exporters B, and C
 - Export supply and import demands are linear
 - Countries B and C are identical

For
simplicity

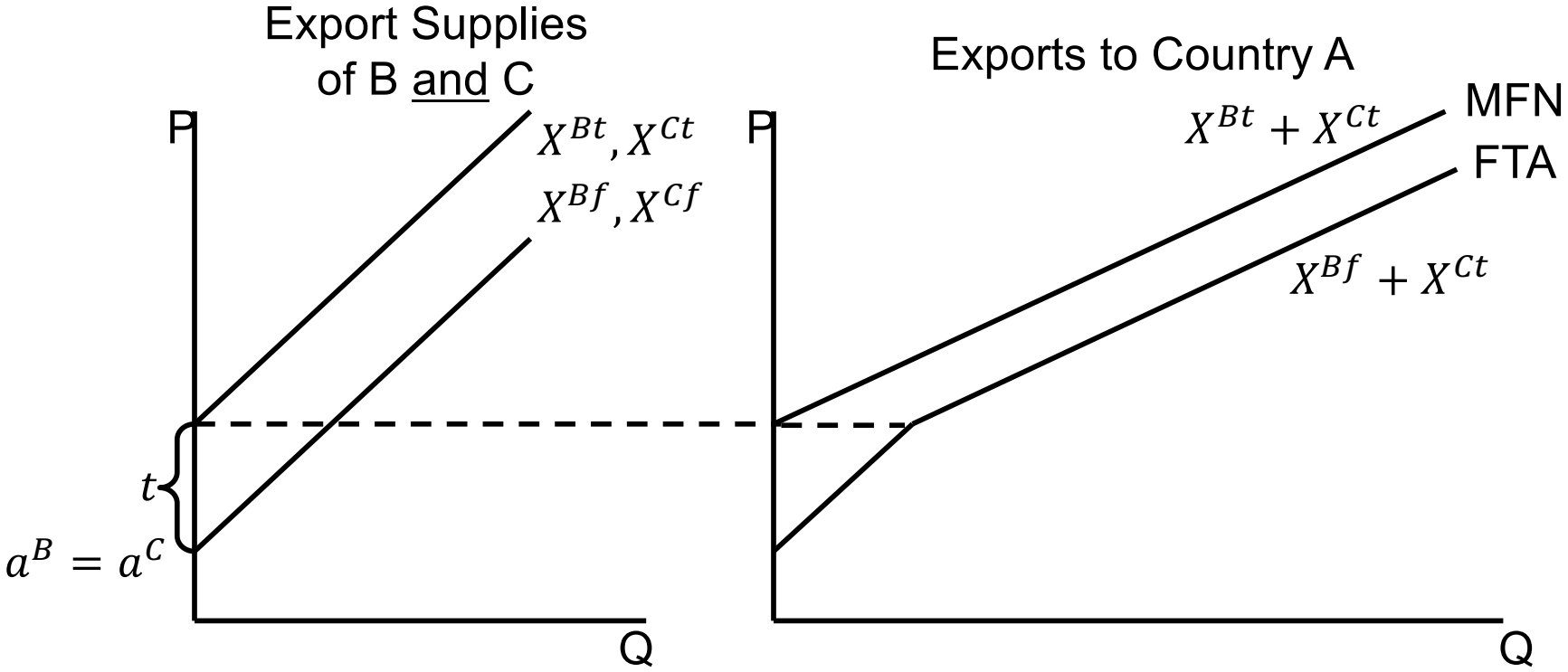
*Much of this is an elaboration of material in World Trade Organization, "Causes and Effects of PTAs: Is it all about preferences?", Ch. C: *World Trade Report 2011*, pp. 92-121.

Upward-sloping Supplies

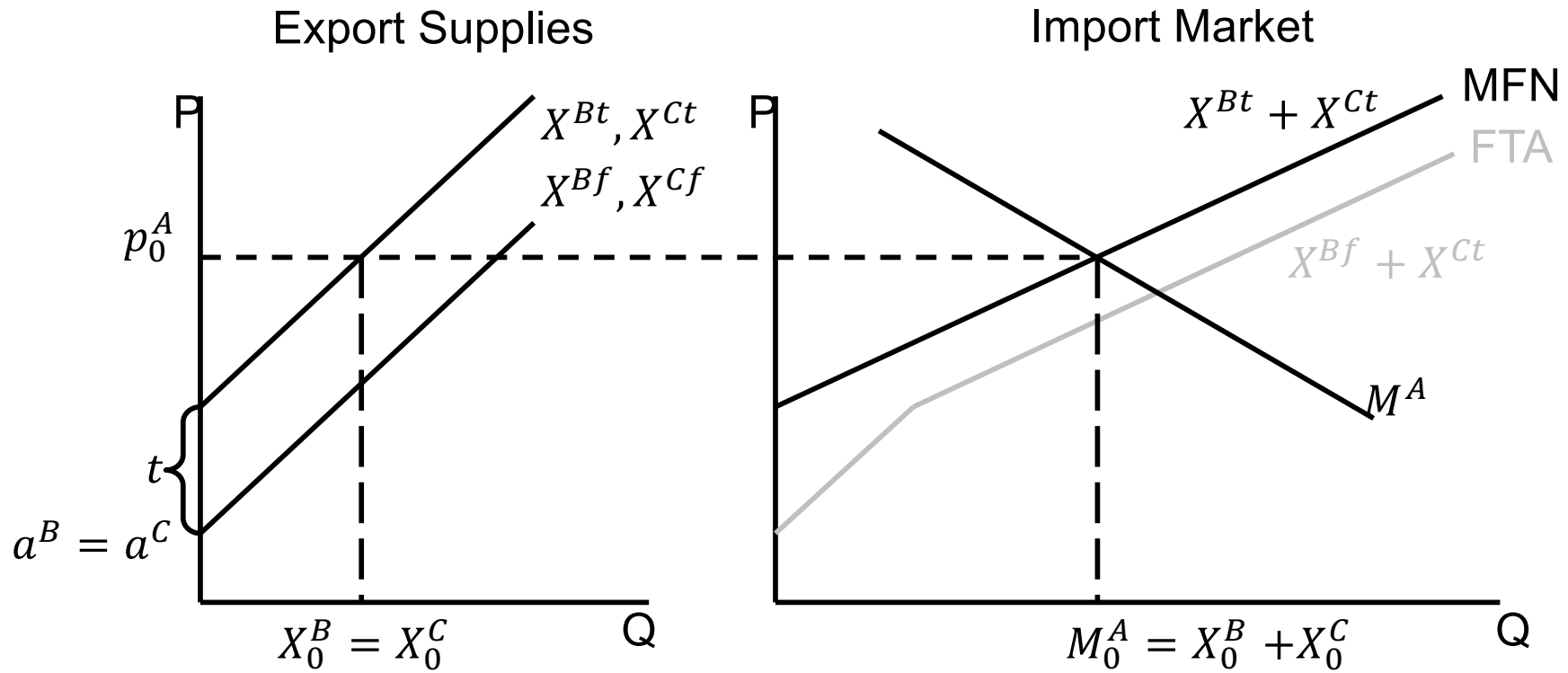
3-country case

- Two equilibria:
 - 0: MFN specific tariff t on exports of both B and C
 - 1: FTA of A and B:
 - tariff t on exports of C;
 - zero tariff on exports of B
- Assume also: A imports from both B and C in both equilibria
 - That's not guaranteed, but it's possible as we'll see, and other cases would be harder

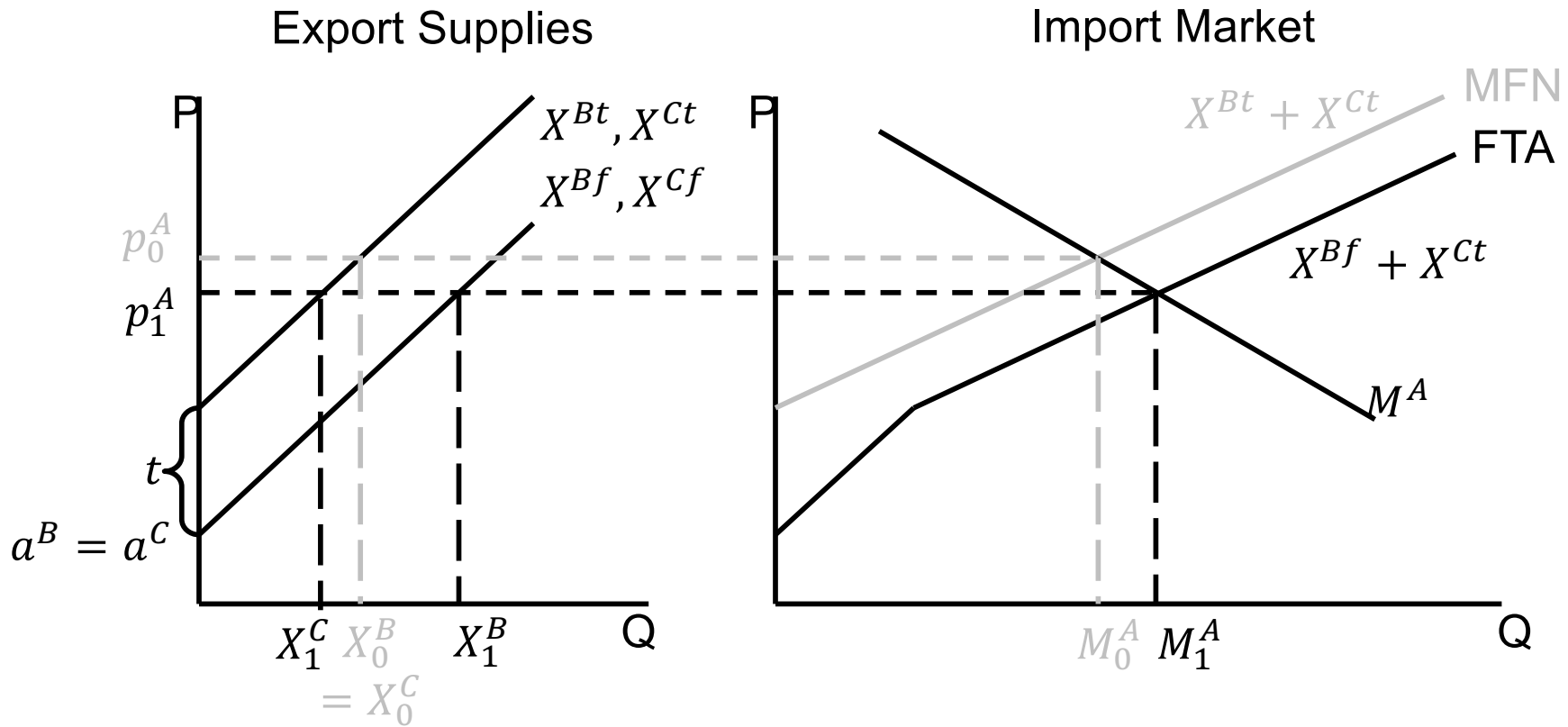
Export Supplies



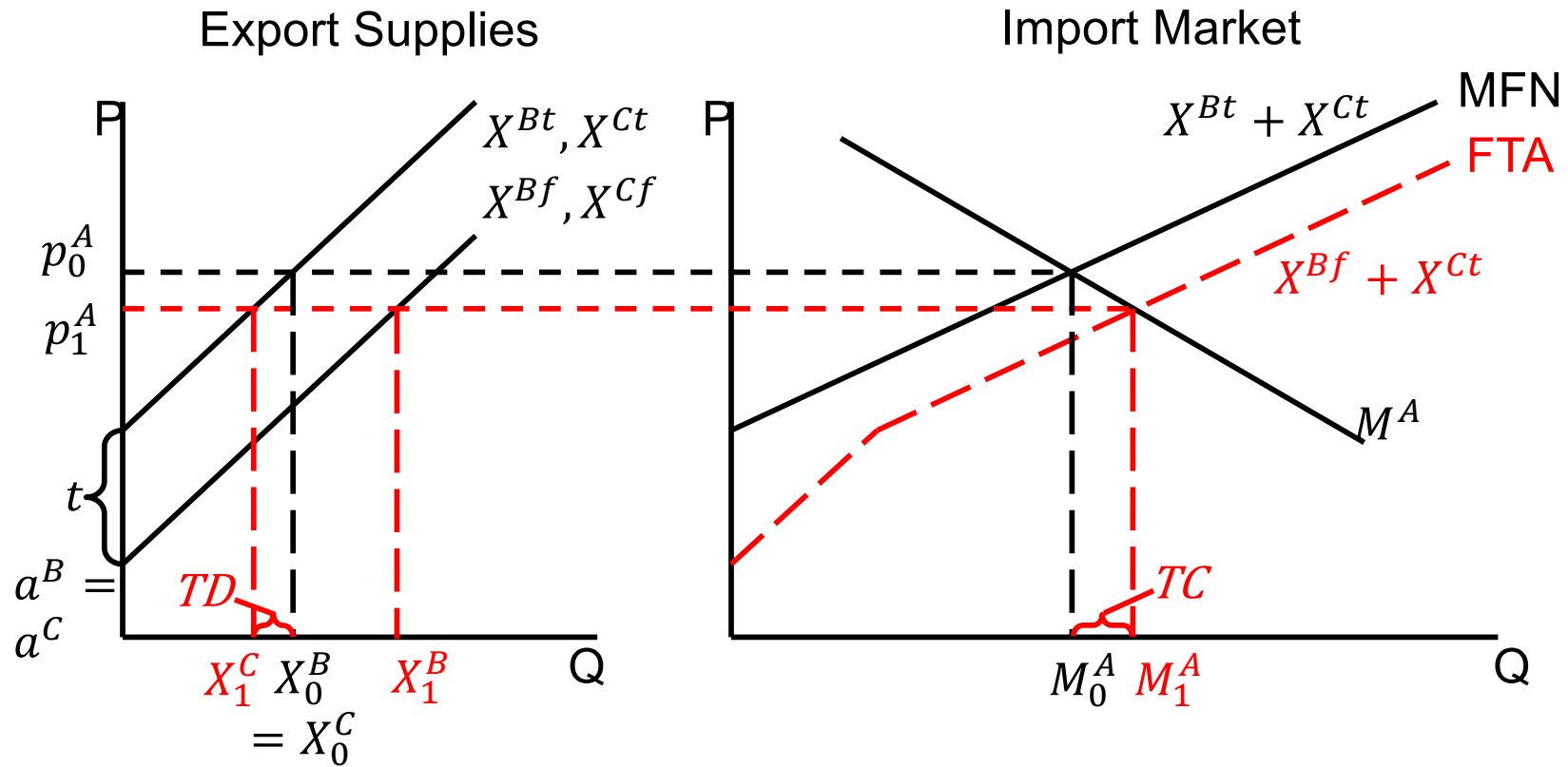
MFN Equilibrium



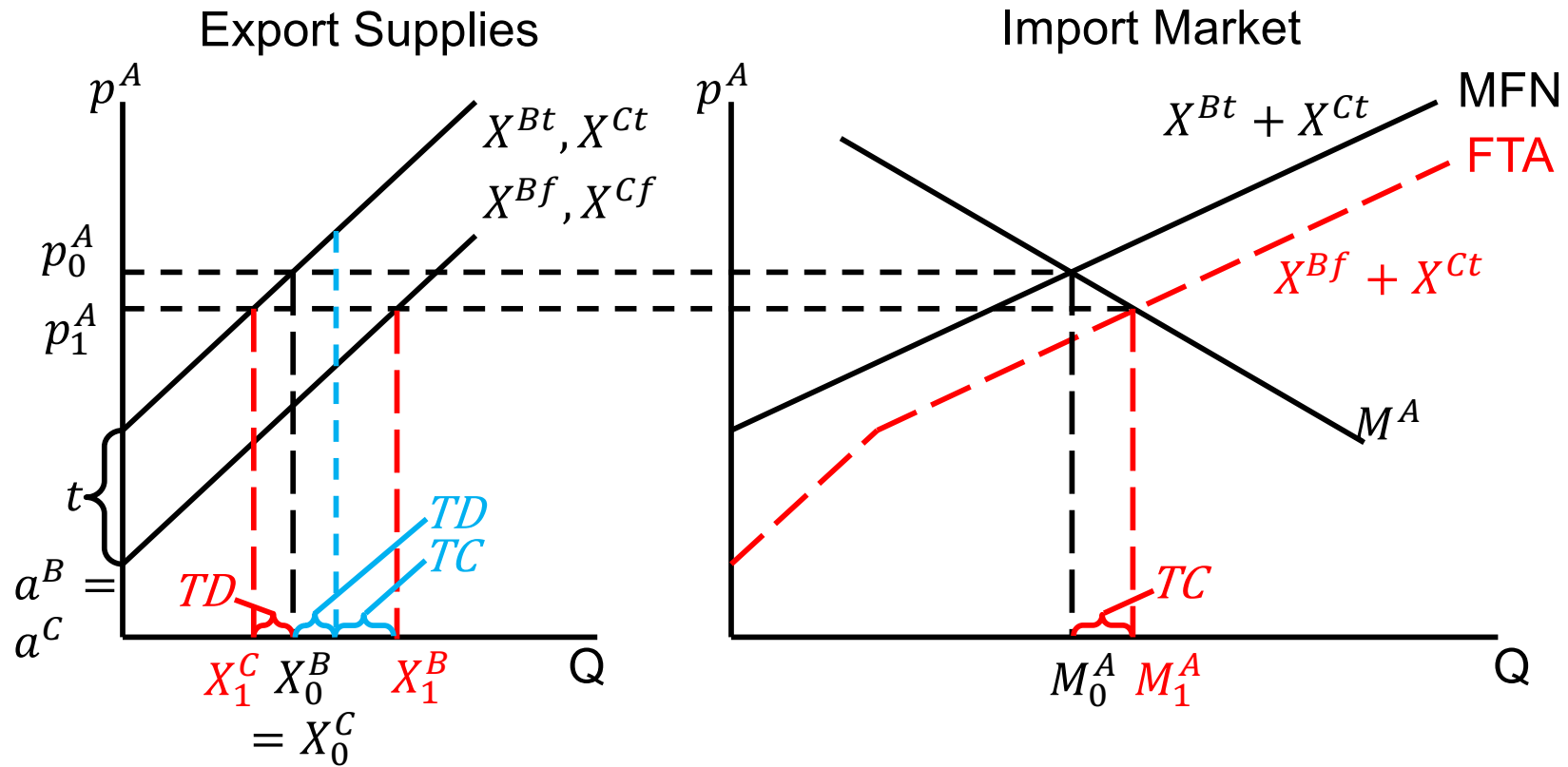
FTA Equilibrium



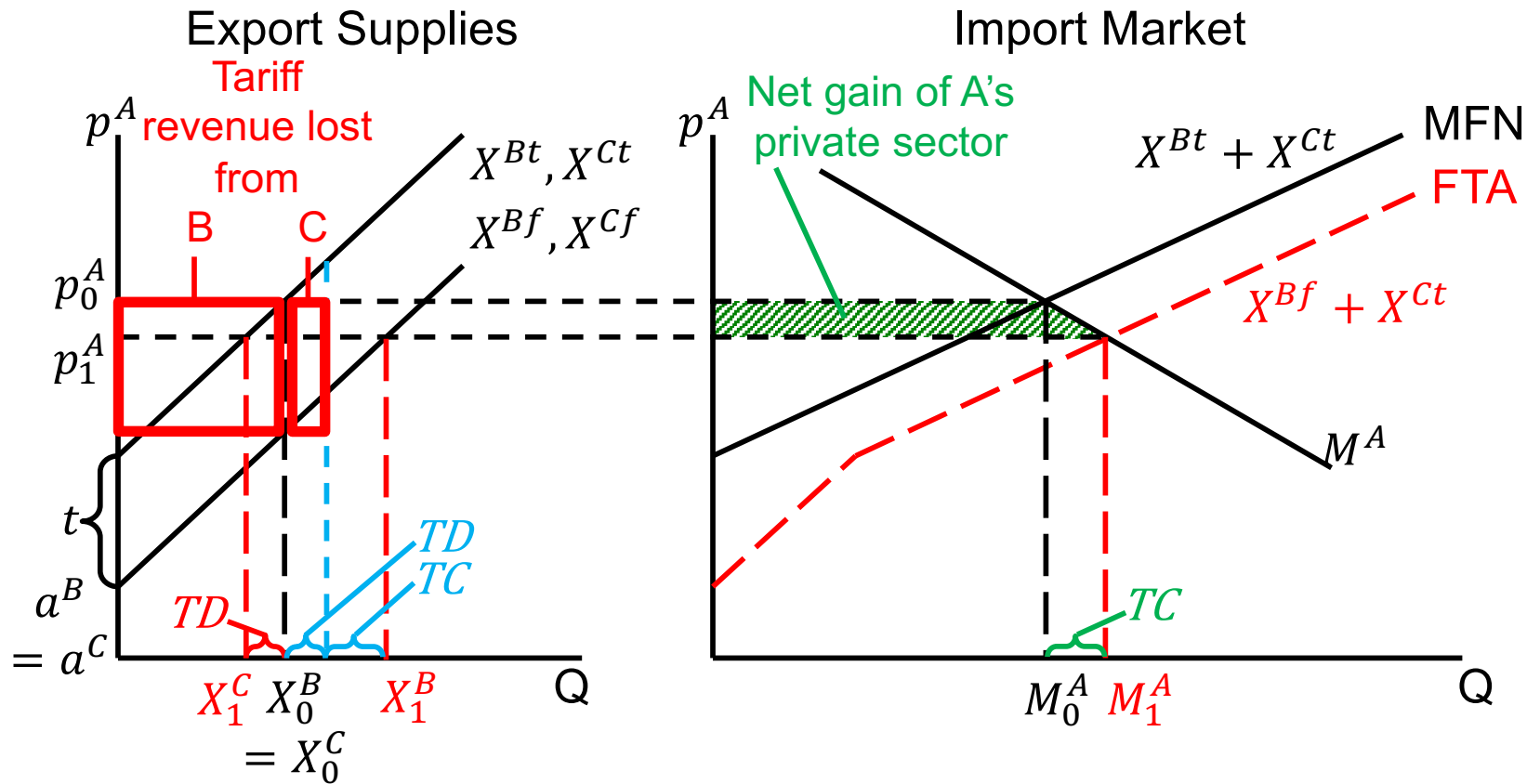
Trade Creation and Diversion



TC & TD, another View



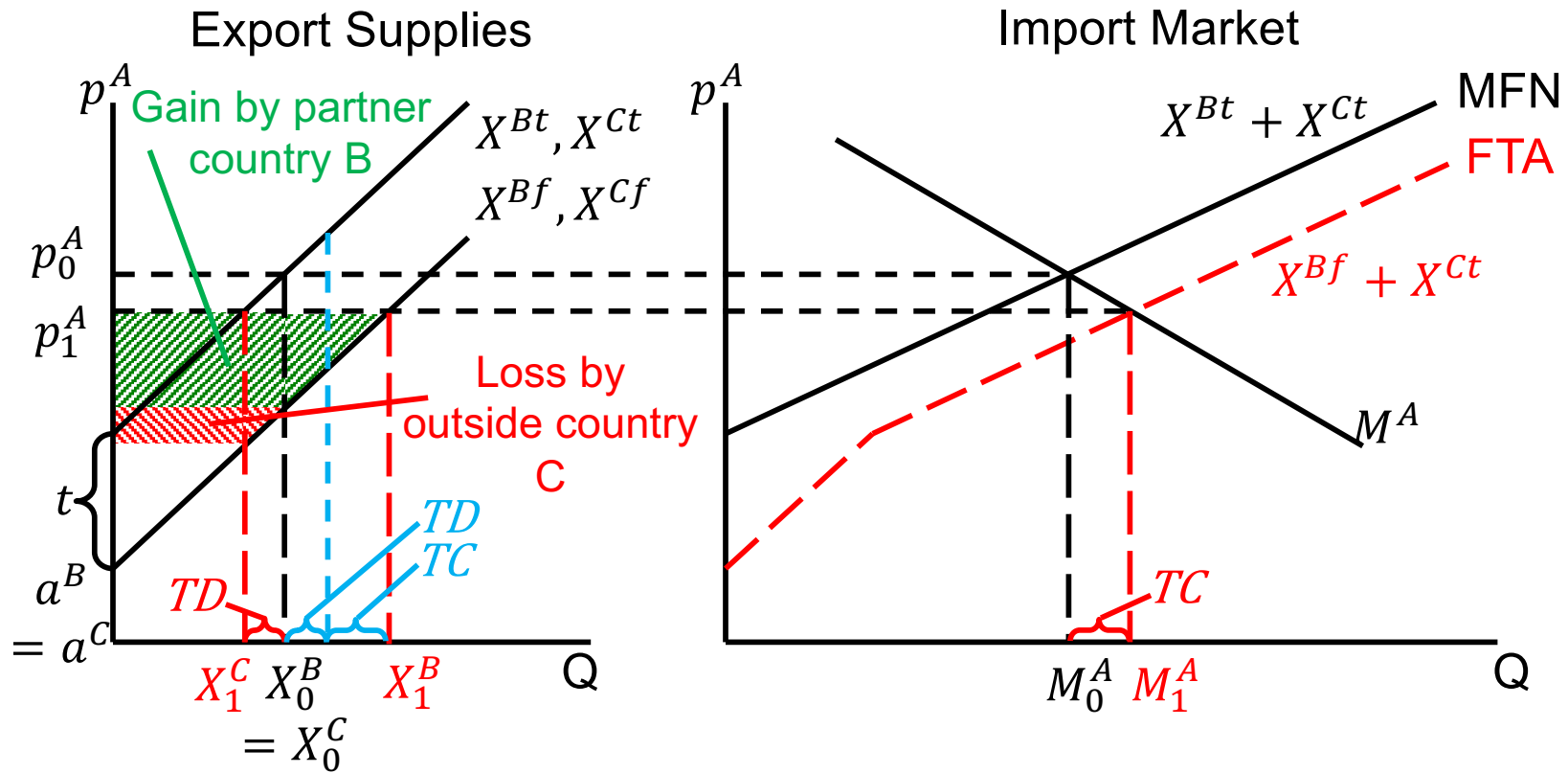
Welfare Effects on Country A



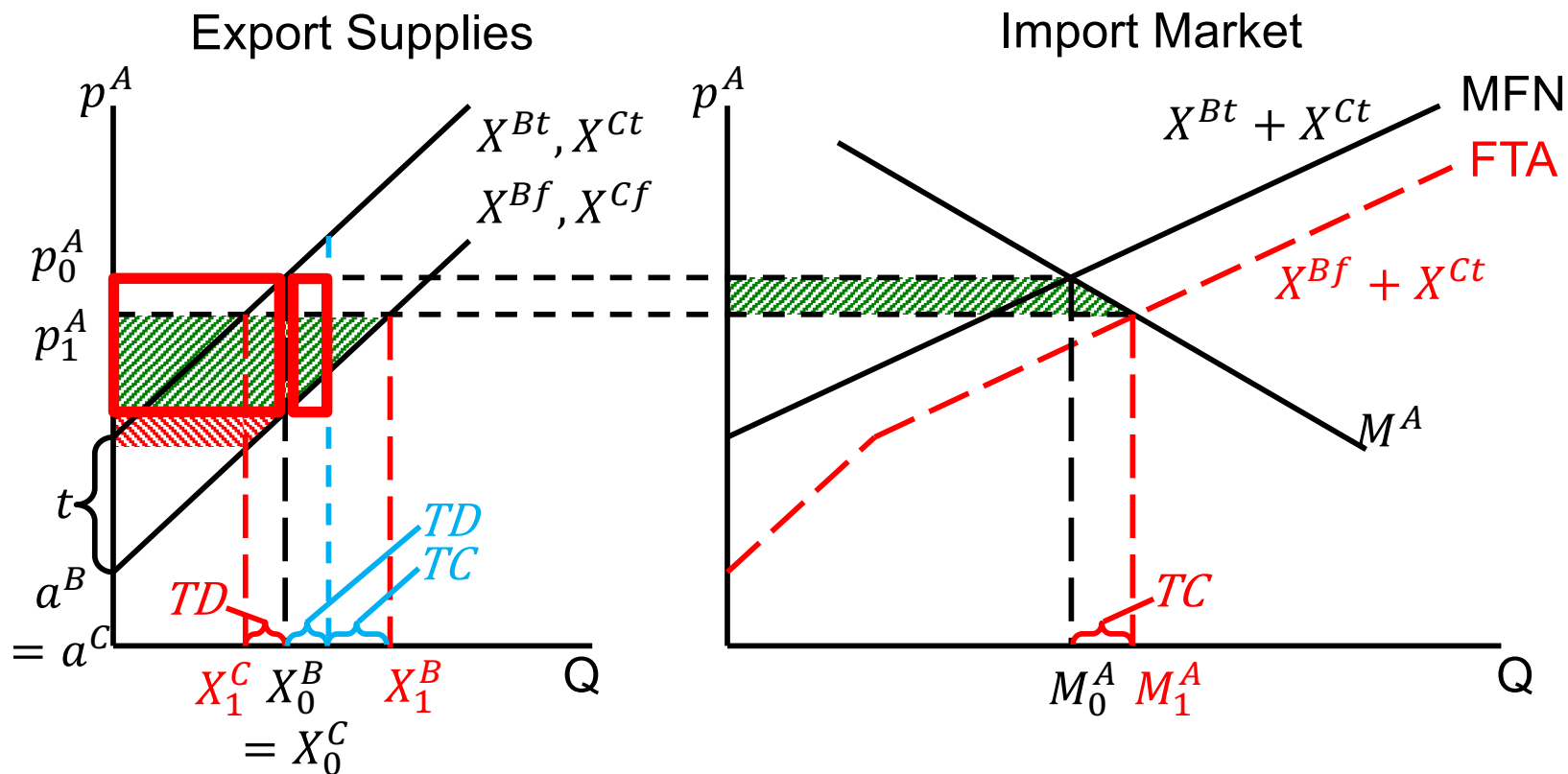
See immediately that country A

- Gains from trade creation
- Loses from trade diversion
- As well as from lost revenue from country B

Welfare Effects on Countries B and C

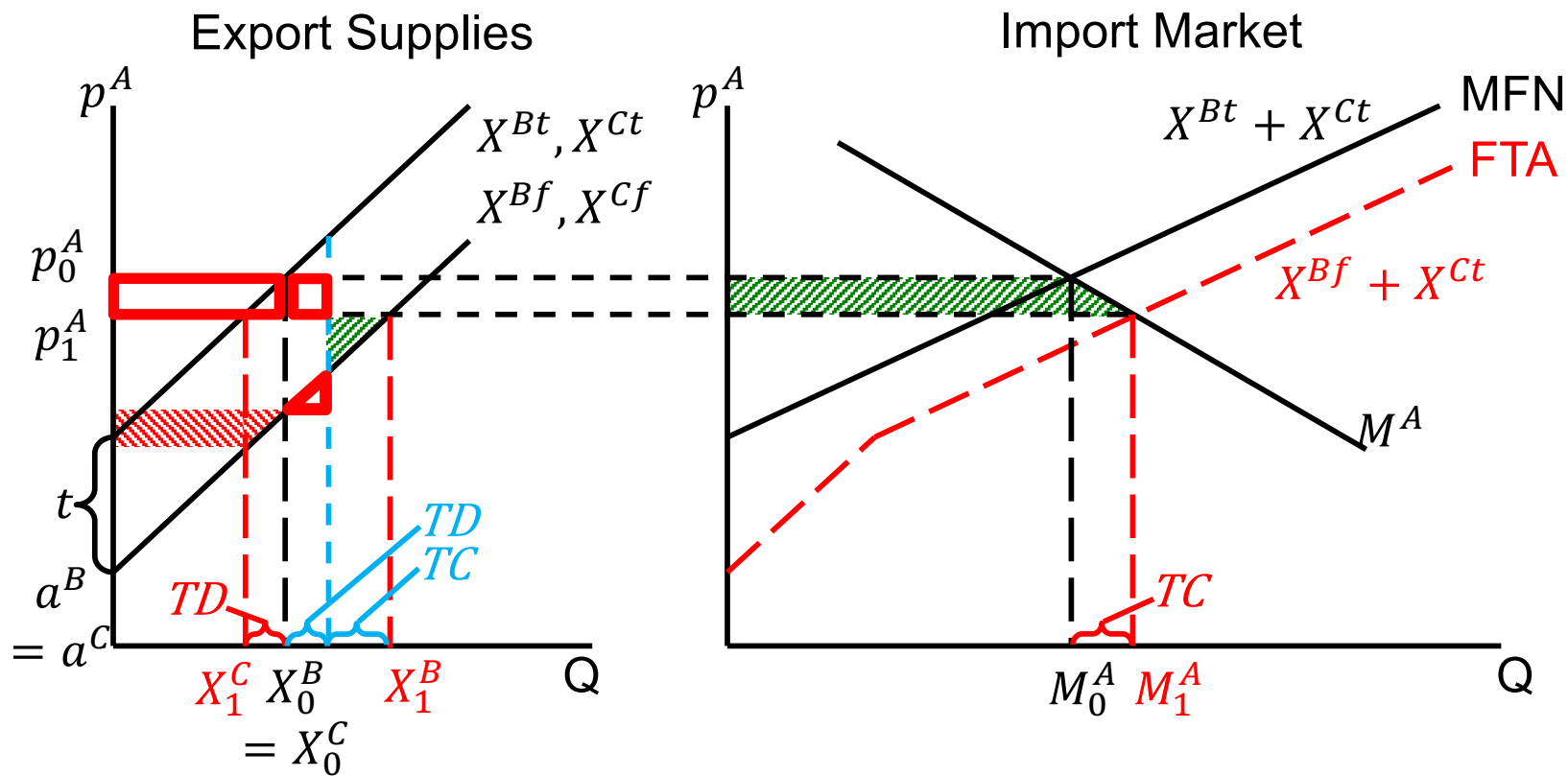


Welfare Effects on the World

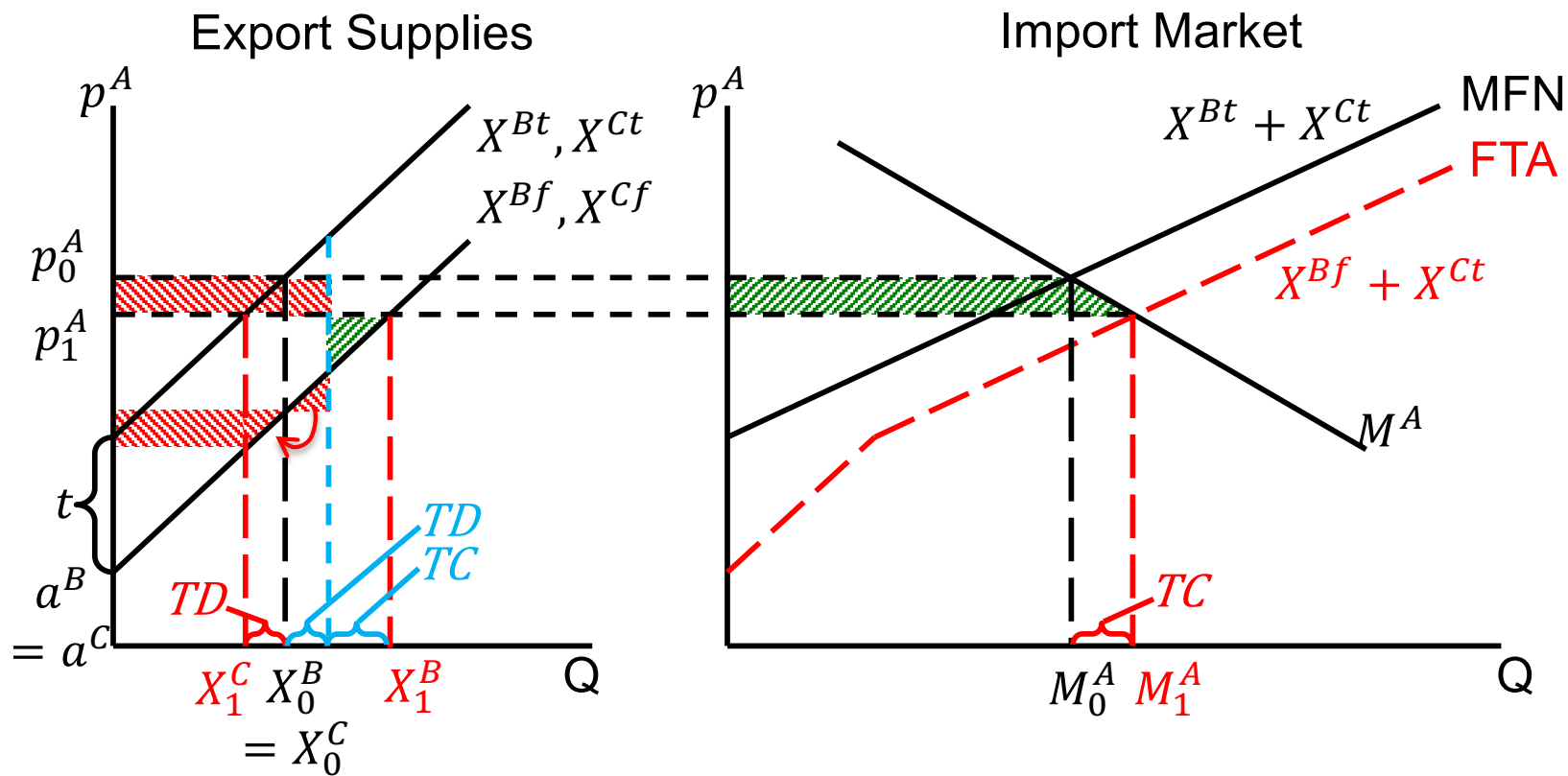


These add up, with much cancellation, to yield the following:

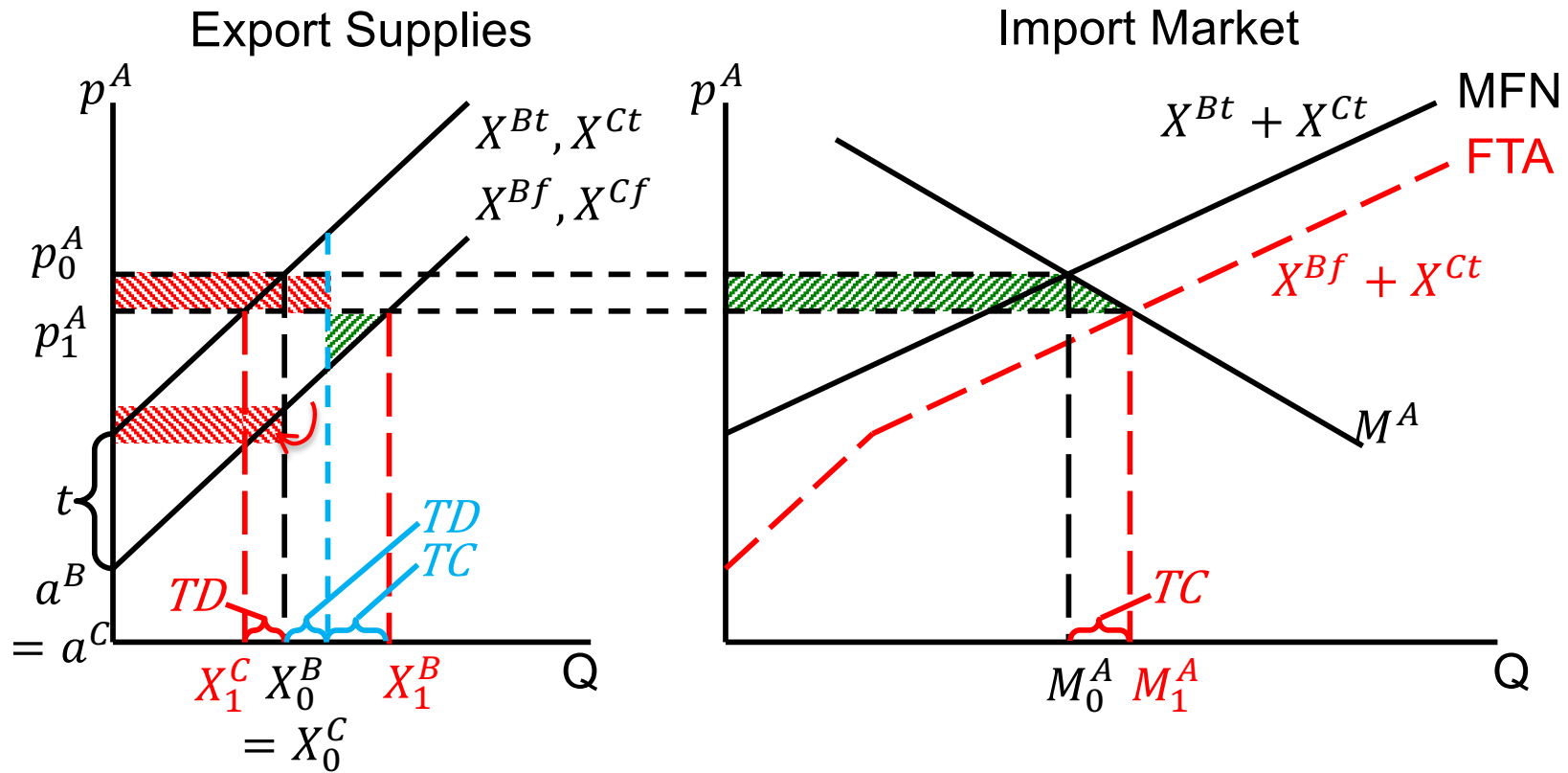
Welfare Effects on the World



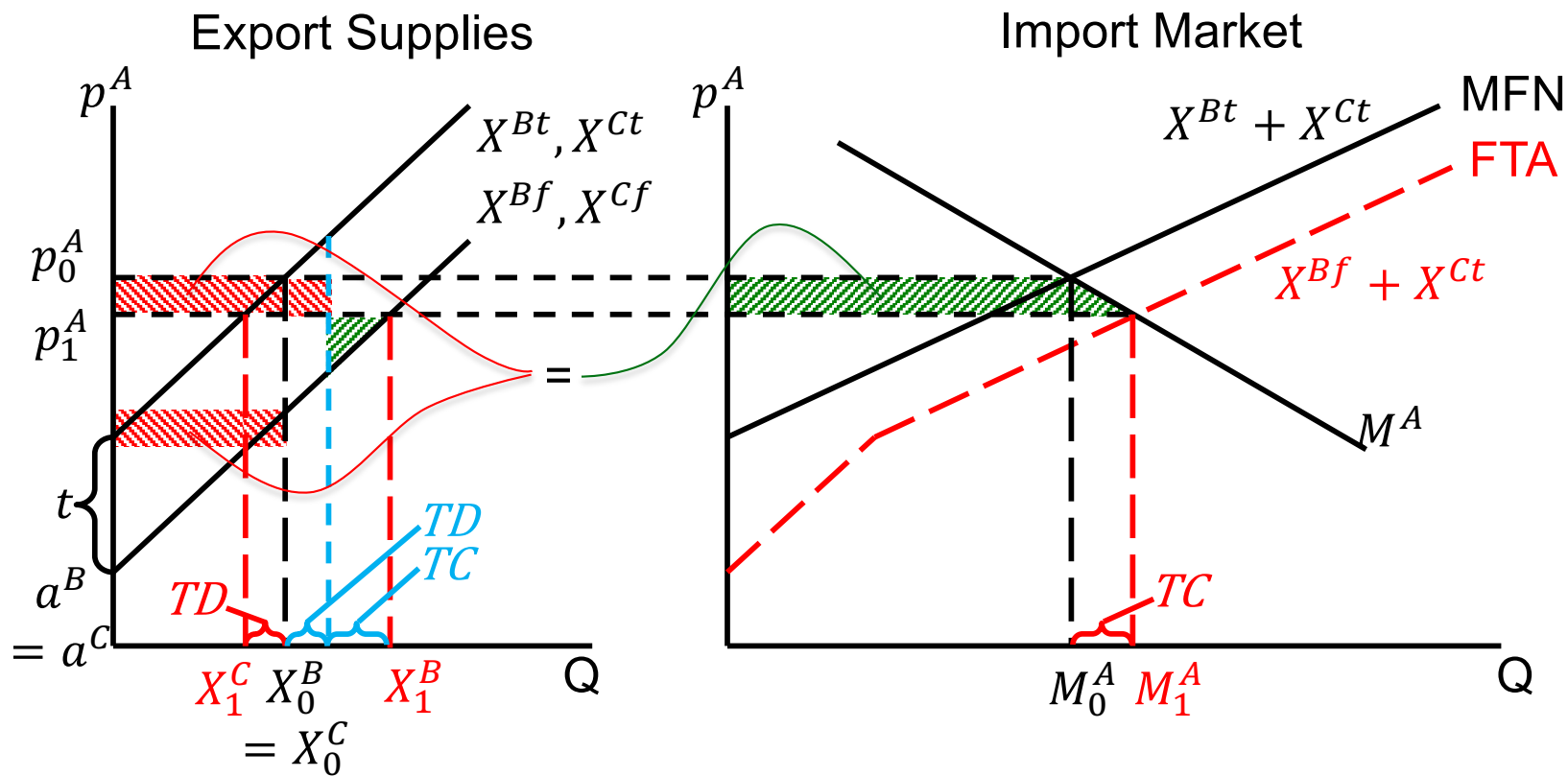
Welfare Effects on the World



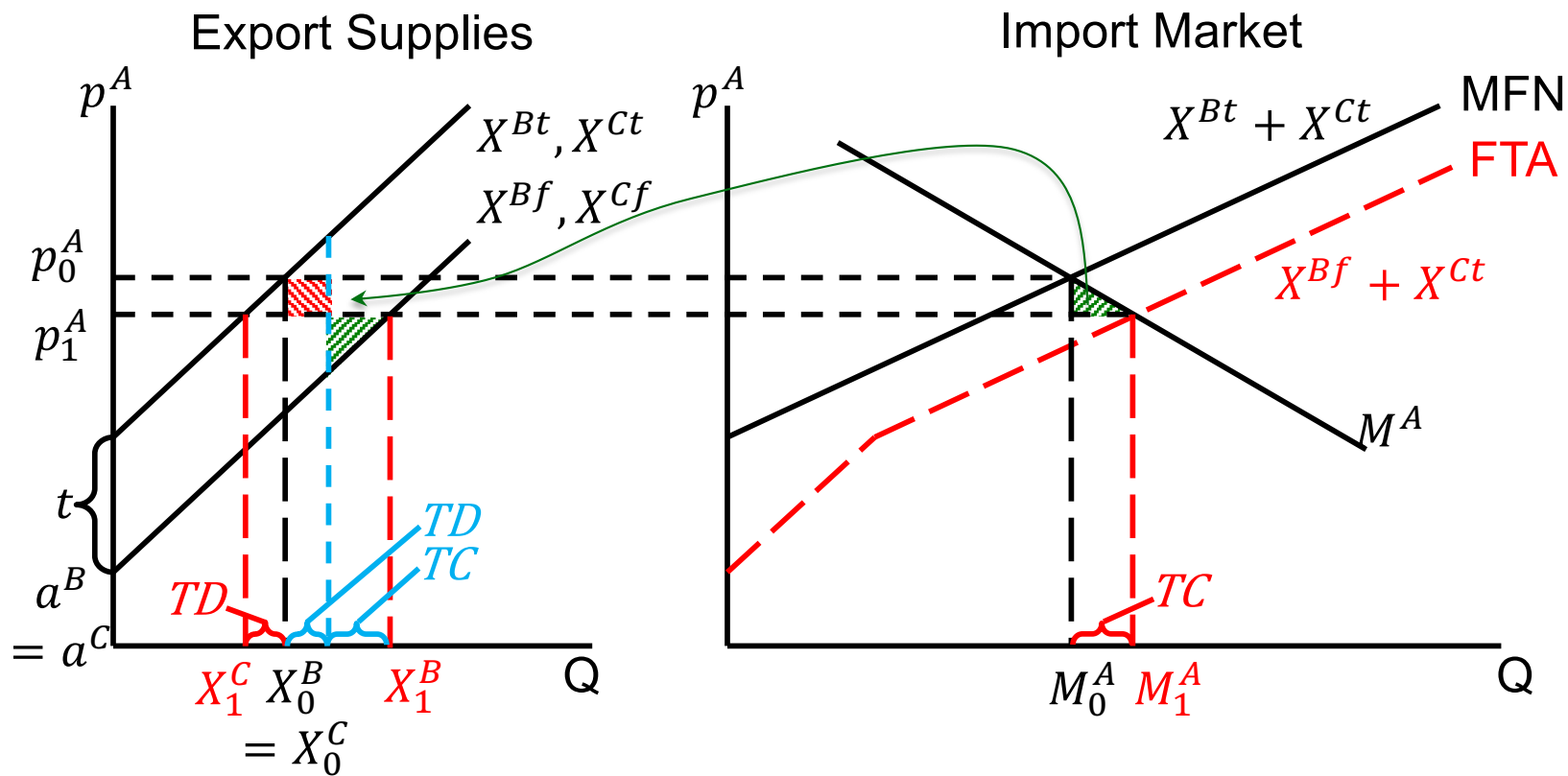
Welfare Effects on the World



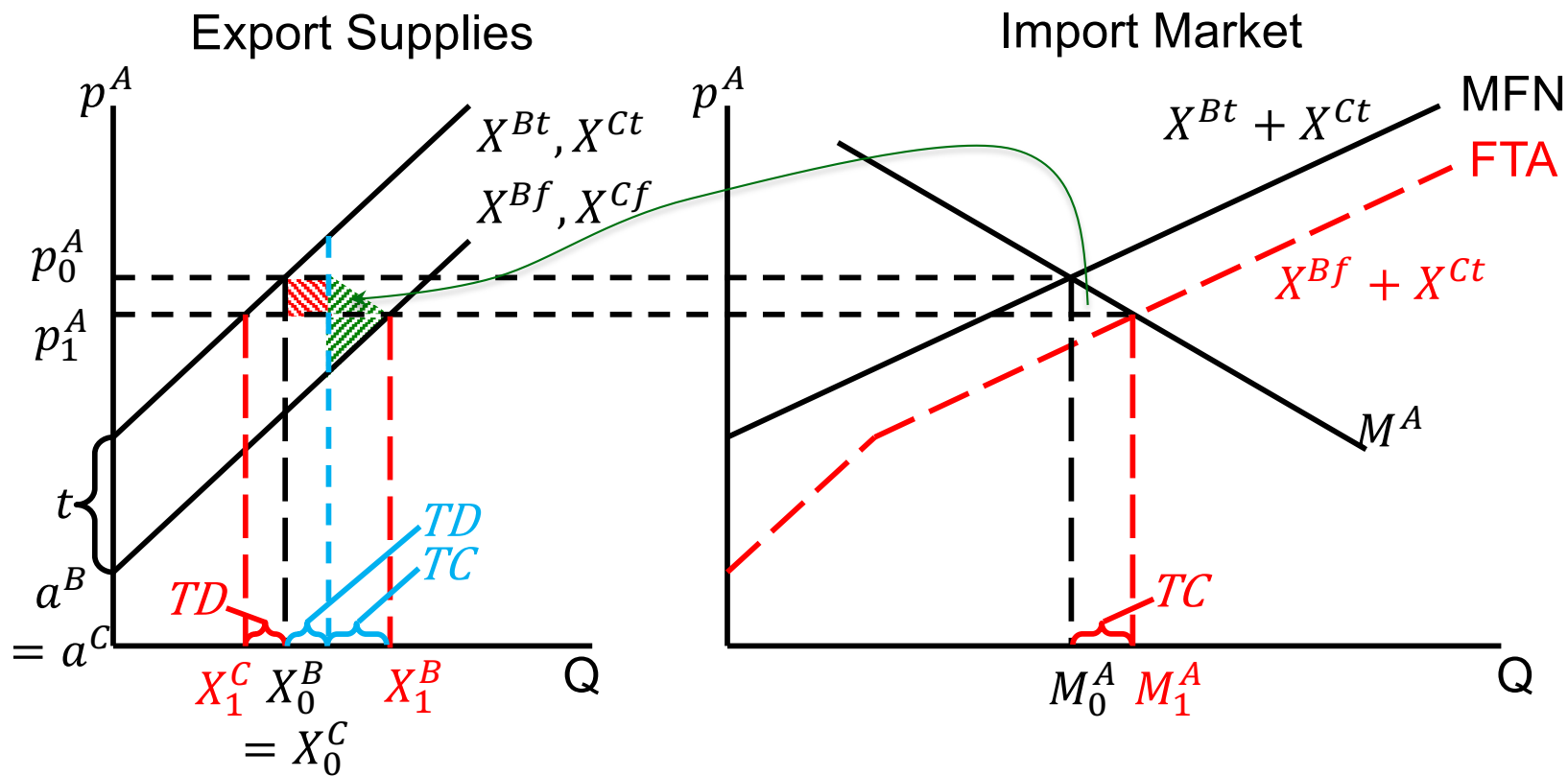
Welfare Effects on the World



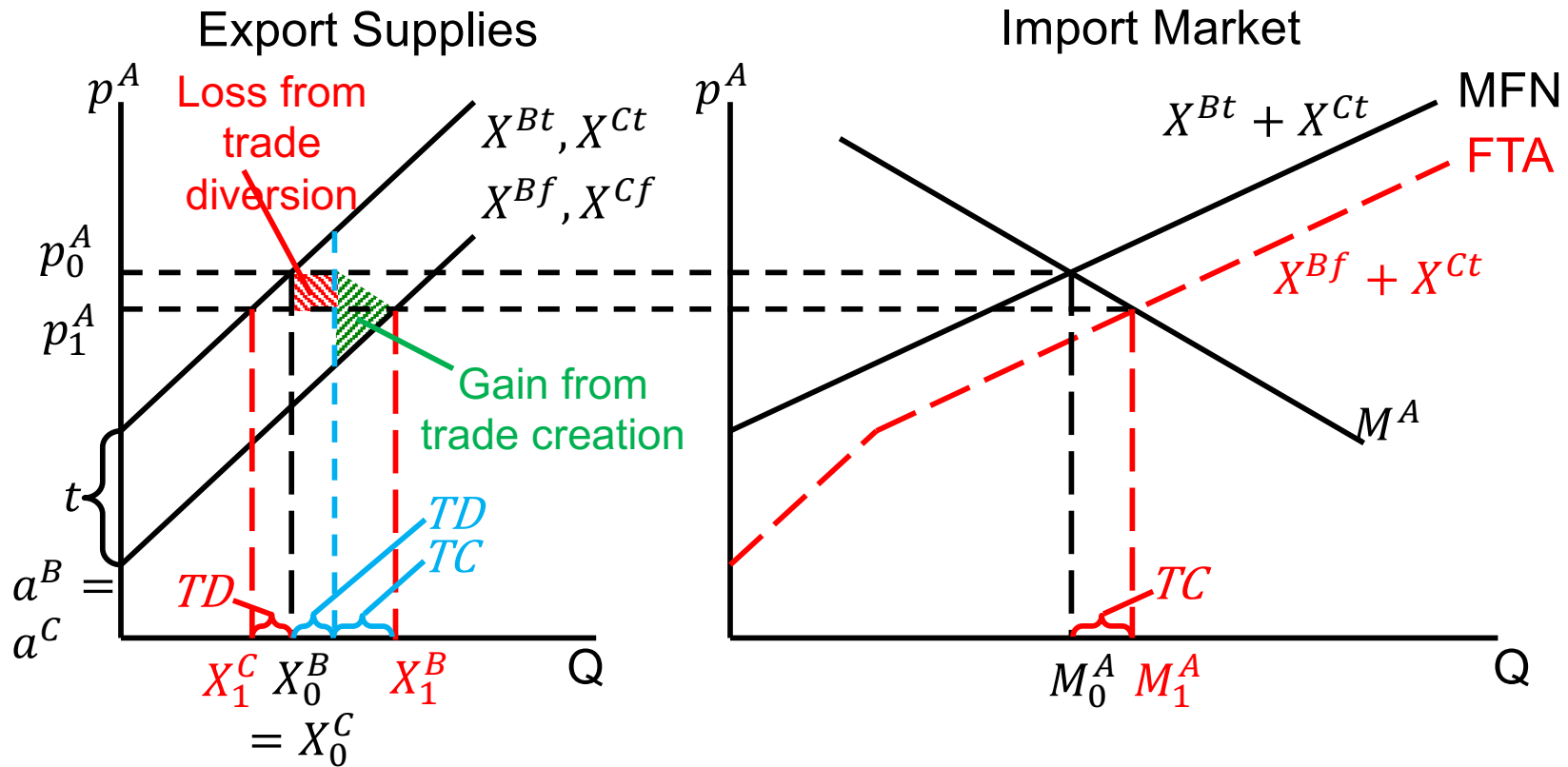
Welfare Effects on the World



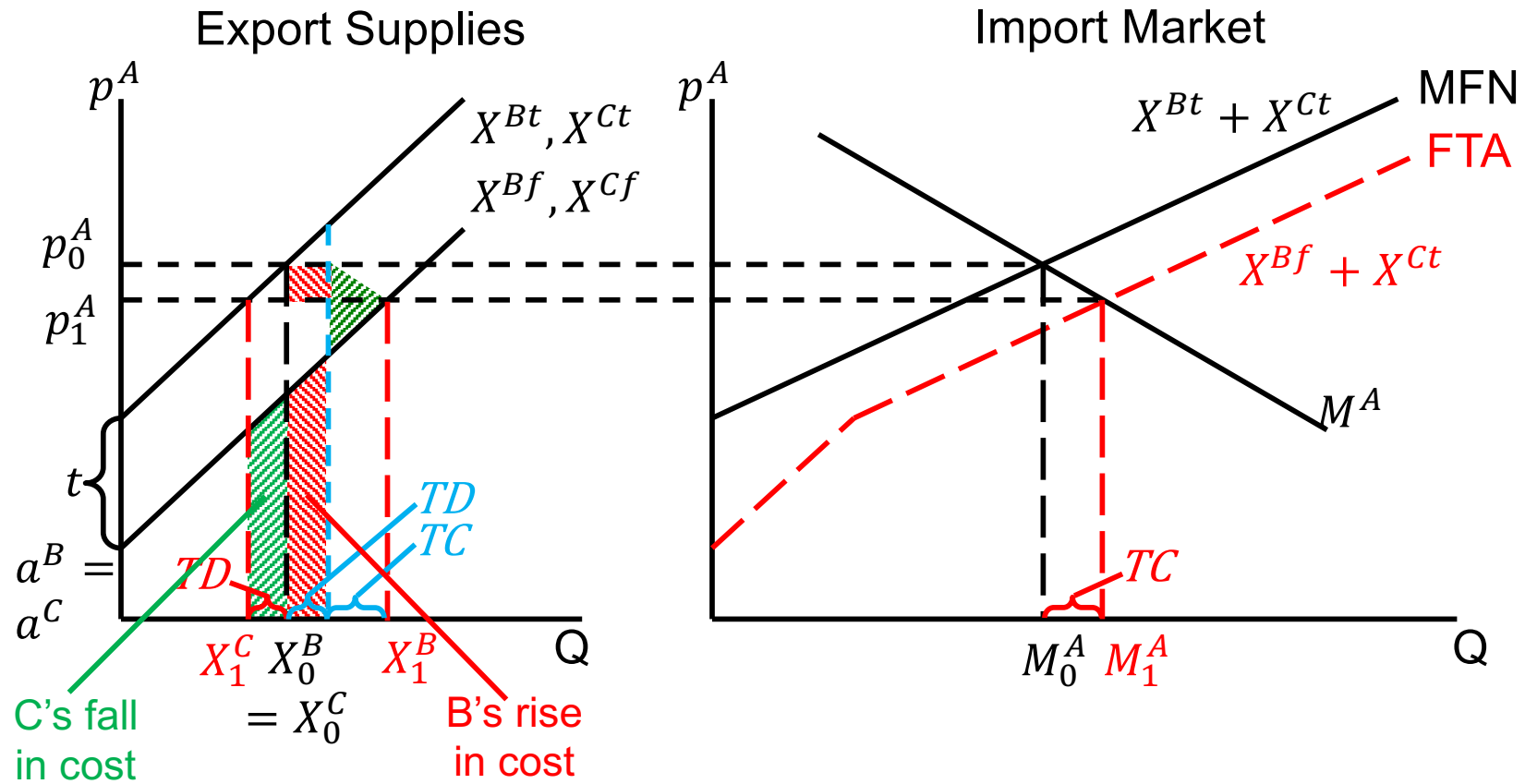
Welfare Effects on the World



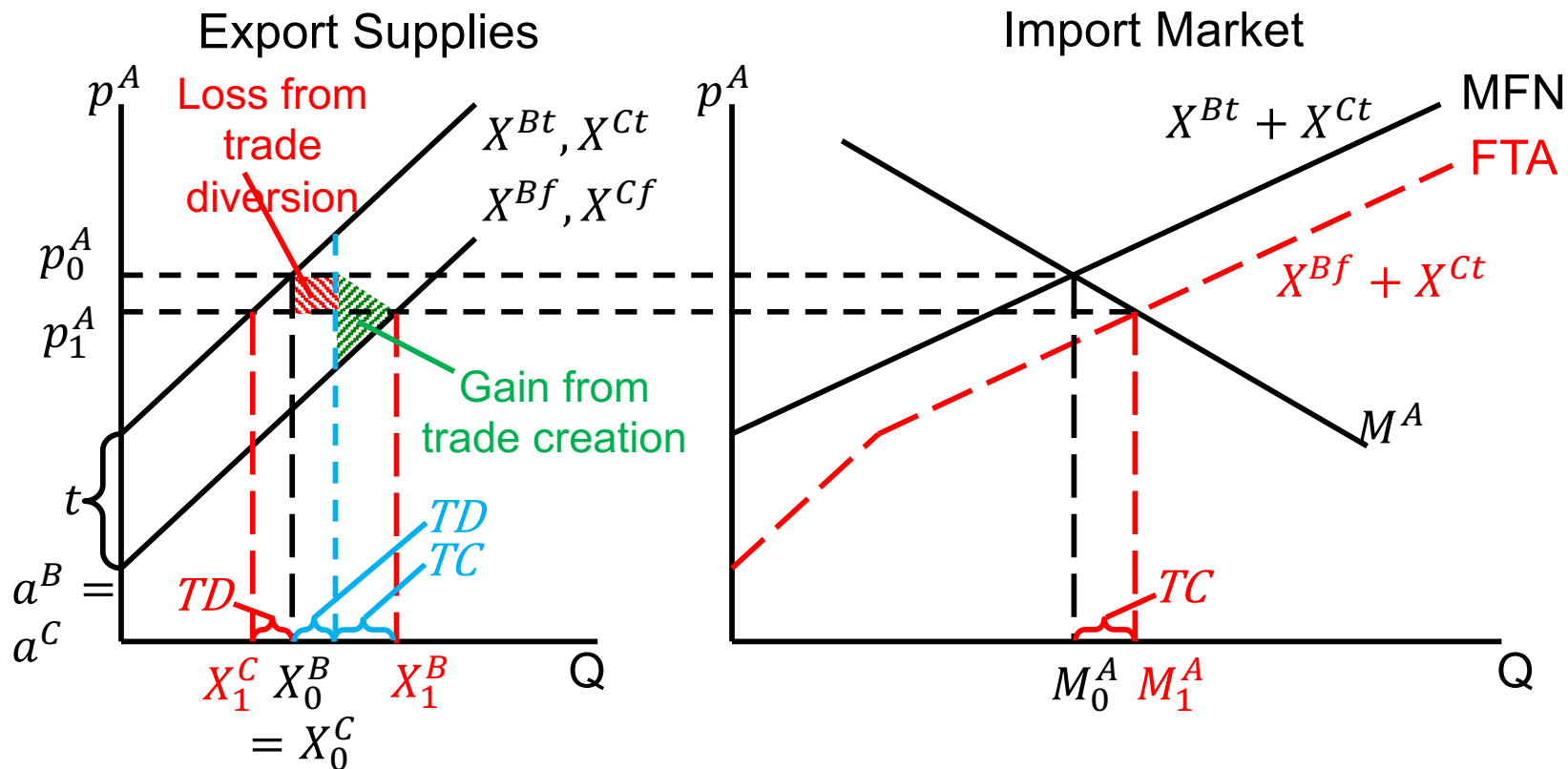
Welfare Effects on the World



Why the Loss from Trade Diversion



Welfare Effects on the World



- Loss is an area, product of the price change and the quantity of trade diversion, with the latter depending on the former.
- So the loss rises with the square of trade diversion.

Pause for Discussion

Questions

(Not asked before)

- Why did we need to assume that “A imports from both B and C in both equilibria.”
 - Could it have been otherwise?
 - Would it matter for any results?
- Why is trade diversion harmful if both exporters initially charge the same price?

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- Simplest model: horizontal supplies
- **Upward-sloping supplies**
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- Are FTAs Beneficial?

Four-Country Model in Equations

- Assume
 - Partial-equilibrium model of trade in a good
 - All the same assumptions we've used before for tariffs
 - Four countries, one importer A, and three exporters B, C, and D
 - Export supply and import demands are linear
 - Countries B, C, and D are not assumed identical
- Purpose
 - To see effect of country A adding a new FTA (with B) when it already has an FTA (with D). (Country C remains an outside country, the rest of world.)

Four-Country Model in Equations

- Three equilibria
 - 0: MFN tariff t on exports of B, C, and D
 - 1: FTA of A and D:
 - Tariff t on exports of B and C;
 - Zero tariff on exports of D
 - 2: FTA of A with B, keeping FTA with D
 - Tariff t on exports of C only
 - Zero tariff on exports of B and D
- Consider only cases with positive exports to A from all three of B, C, and D in all equilibria

Skip to results

The Model

Exports:

$$X^i = b^i(p^i - a^i), \quad i = B, C, D, \quad p^i \geq a^i$$

Imports:

$$M^A = b^A(a^A - p^A), \quad p^A \leq a^A$$

Equilibrium:

$$M^A = X^B + X^C + X^D$$

The Model

Let:

$$\beta = b^A + b^B + b^C + b^D$$

$$\theta^i = b^i / \beta$$

$$\gamma = \theta^A a^A + \theta^B a^B + \theta^C a^C + \theta^D a^D$$

Then solution is:

$$p^A = \gamma + \theta^B t^B + \theta^C t^C + \theta^D t^D$$

The Model

- With more assumptions, b^i are proportional to country size
 - (See paper)
- Therefore θ^i is country i 's share of world economy
 - (This is not really right, as it assumes both demanders and suppliers in proportion to population. Exporters will in fact have more firms, and thus greater weight, than importers.)

The Model

Effect of new FTA between A and B

(in presence of A's FTA with D)

Let Δ be change from equilibrium 1 to equilibrium 2

$$\Delta p^A = -\theta^B t$$

Thus price in A falls by a fraction of the tariff, in proportion to size of new partner compared to world.

Country B's price rises by the rest of the tariff

$$\Delta p^B = (1 - \theta^B) t$$

Because A's tariff on C and D does not change

$$\Delta p^C = \Delta p^D = \Delta p^A = -\theta^B t$$

The Model

From the price changes, one derives the following changes in quantities of trade:

$$\Delta M^A = \theta^B b^A t > 0$$

$$\Delta X^B = \theta^B (b^A + b^C + a^D) t > 0$$

$$\Delta X^C = -\theta^B b^C t < 0$$

$$\Delta X^D = -\theta^B b^D t < 0$$

The Model

As must be true from market equilibrium

$$\Delta X^B = \Delta M^A - \Delta X^C - \Delta X^D$$

Thus the added exports of the partner country include the new imports of country A plus the reduced exports of countries C and D.

We label

$-\Delta X^C$ as “trade diversion”

and

$-\Delta X^D$ as “trade reversion”

because it is reversal of trade diversion from the prior FTA.

The Model

The equations of the model yield:

$$\text{Trade Creation} = TC = \theta^B b^A t > 0$$

$$\text{Trade Diversion} = TD = \theta^B b^C t > 0$$

$$\text{Trade Reversion} = TR = \theta^B b^D t > 0$$

where

- b^i are slopes of import demand and export supply curves, roughly proportional to country sizes
- θ^B is roughly country B's share of world economy


The Model

Welfare effects of new FTA

Country A (home):

$$\Delta W^A = (M_0^A / b^A + \theta^B t / 2) TC - tTD - tX_0^B$$

Lost tariff
revenue



Country B (new partner):

$$\Delta W^B = \Delta NS^B = \left[X_0^B + \frac{1}{2} (TC + TD + TR) \right] (1 - \theta^B) t$$

Country C (outside world):

$$\Delta W^C = \left[-X_0^C + \frac{TD}{2} \right] \theta^B t$$

Country D (old partner):

$$\Delta W^D = \left[-X_0^D + \frac{TR}{2} \right] \theta^B t$$

The Model

Welfare effects of new FTA on the World

World (A+B+C+D):

$$\Delta W^W = \frac{1}{2}TCt + \frac{1}{2}(TR - TD)t$$

Pause for Discussion

Questions on Deardorff & Sharma, “The Simple Analytics...”

- Under what circumstances will adding a second FTA be harmful for the world?

Outline

- Background
- Simplest model: horizontal supplies
- Upward-sloping supplies
 - 3-country case, in graphs
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**Skipping this
unless there's
extra time**

Four-Country Model in Figures

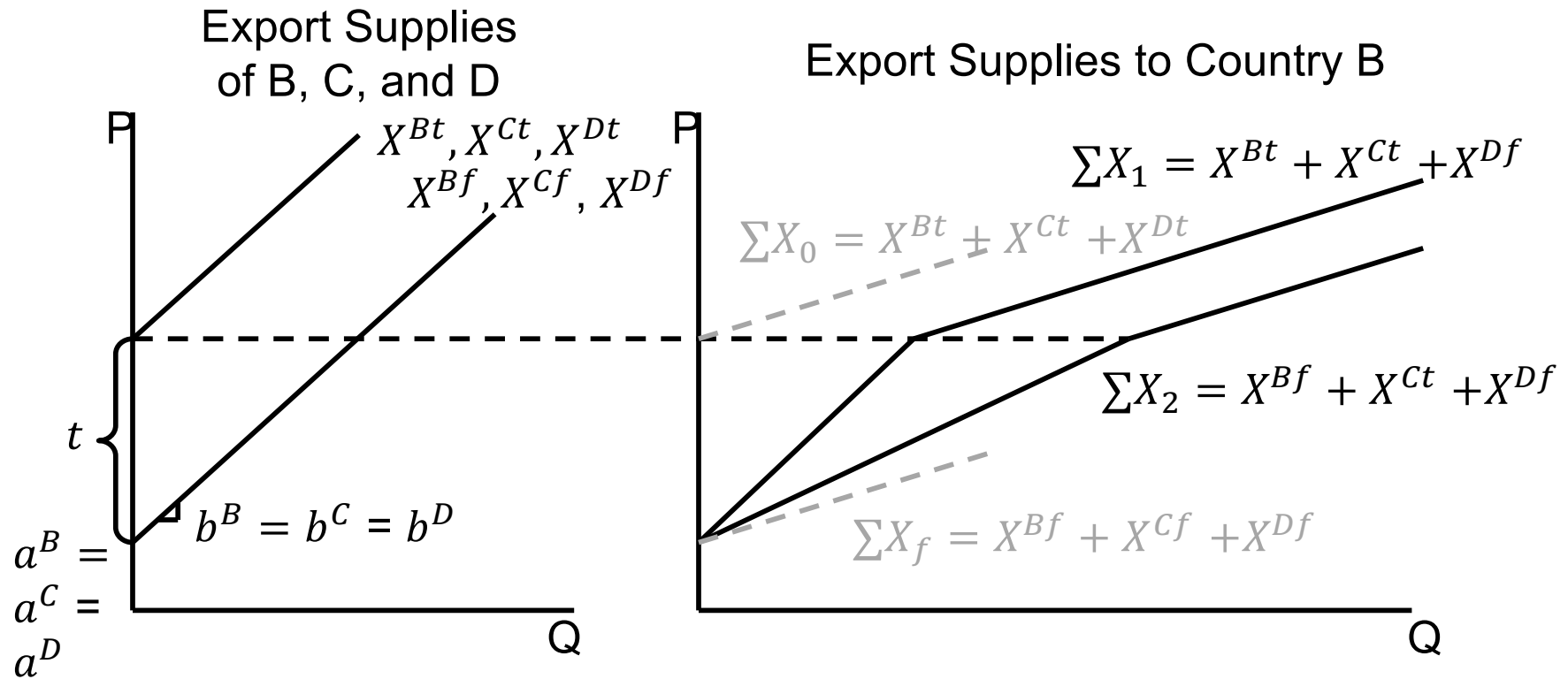
- Four countries:
 - Importer A
 - Exporters B, C, and D
- Export supply and import demands are linear
- Countries B, C, and D are identical

For
simplicity

Four-Country Model in Figures

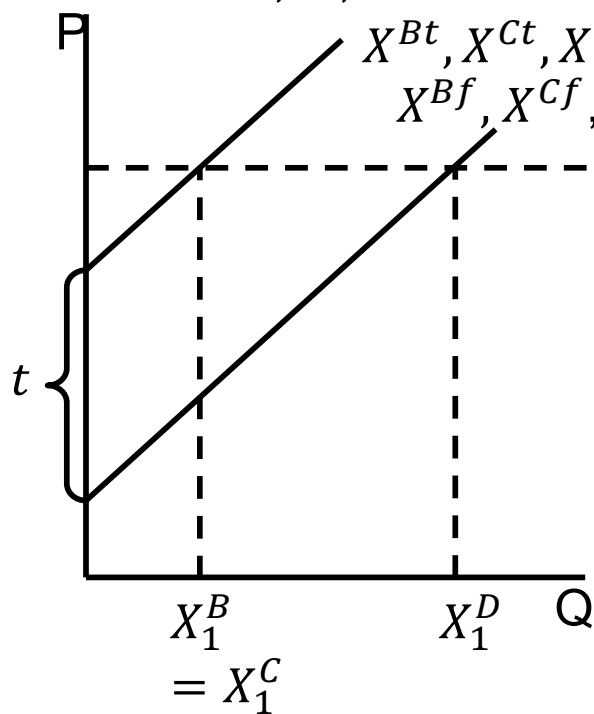
- Two equilibria
 - 1: MFN tariff t on exports of both B and C
 - Zero tariff on exports of old FTA partner D
 - 2: New FTA of A and B:
 - Tariff t on exports of C only;
 - Zero tariff on exports of two FTA partners B and D

Export Supplies

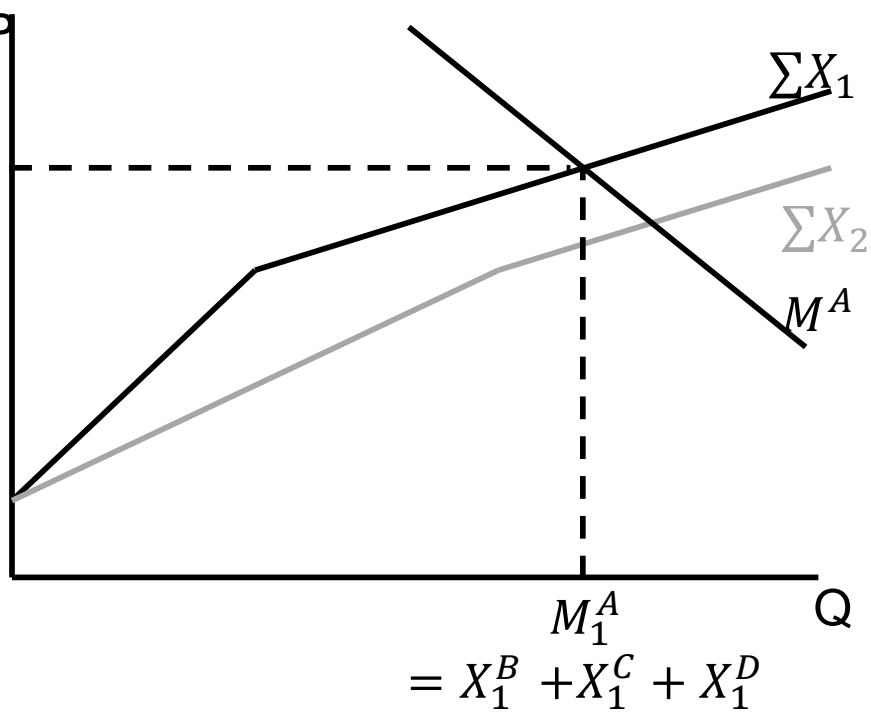


Equilibrium 1: A has FTA with 1 country, D

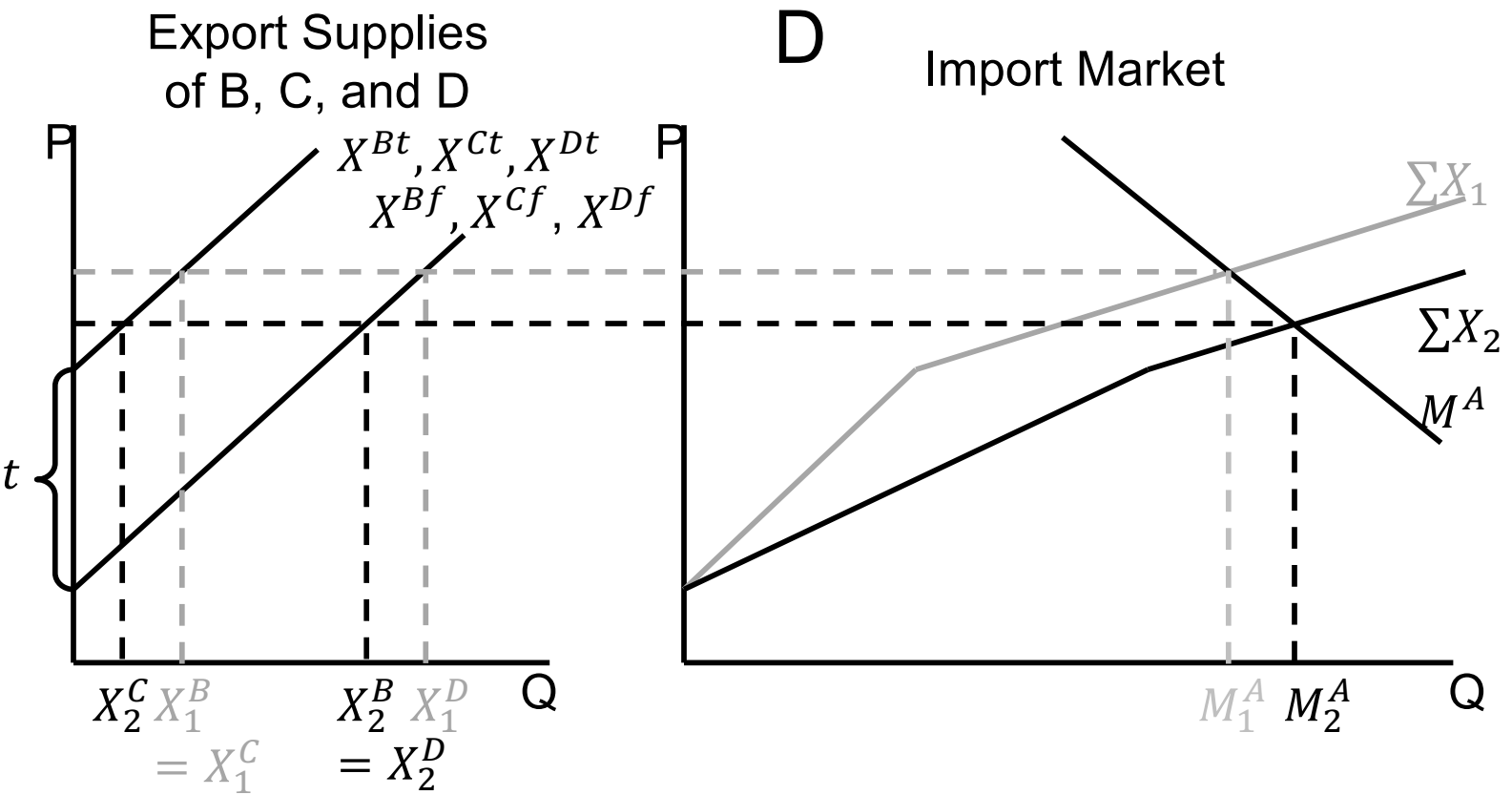
Export Supplies
of B, C, and D



Import Market



Equilibrium 2: A has FTA with 2 countries, B & C

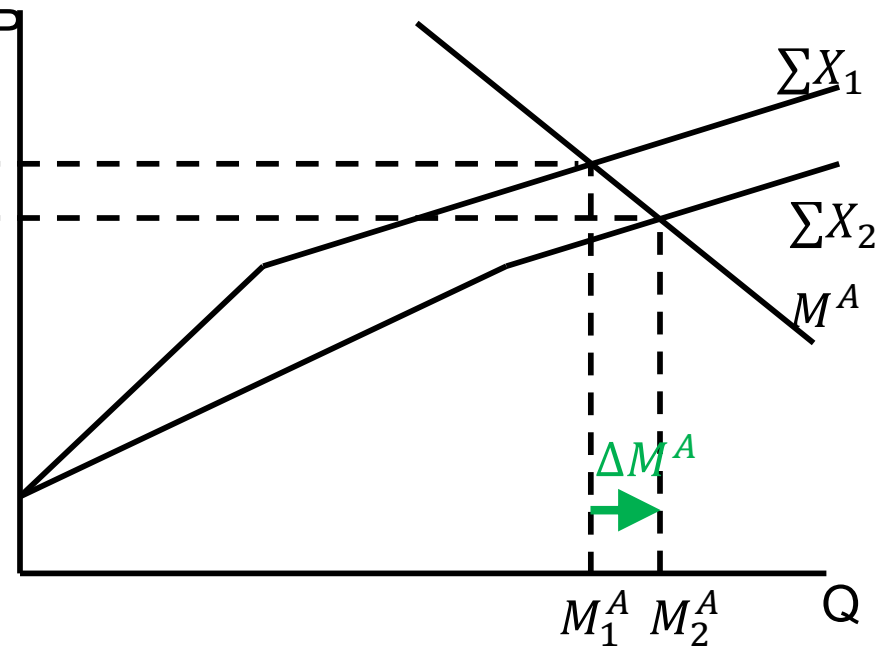
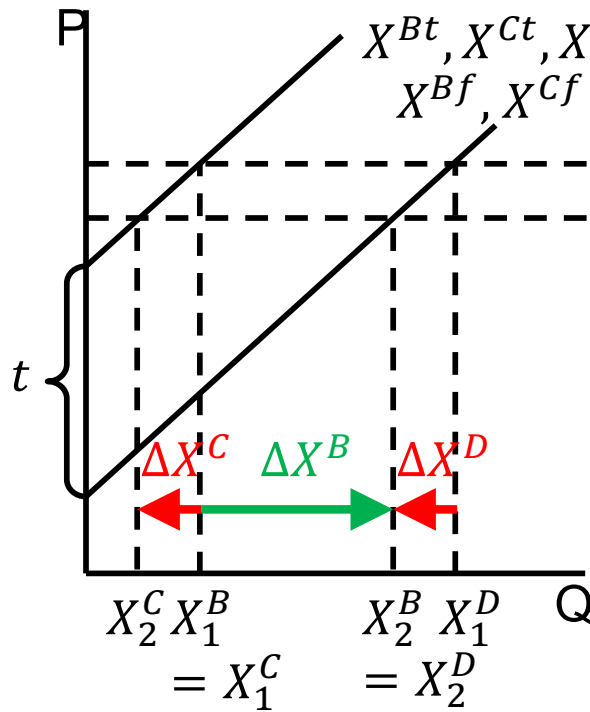


Changes in Trade from expanding FTA to

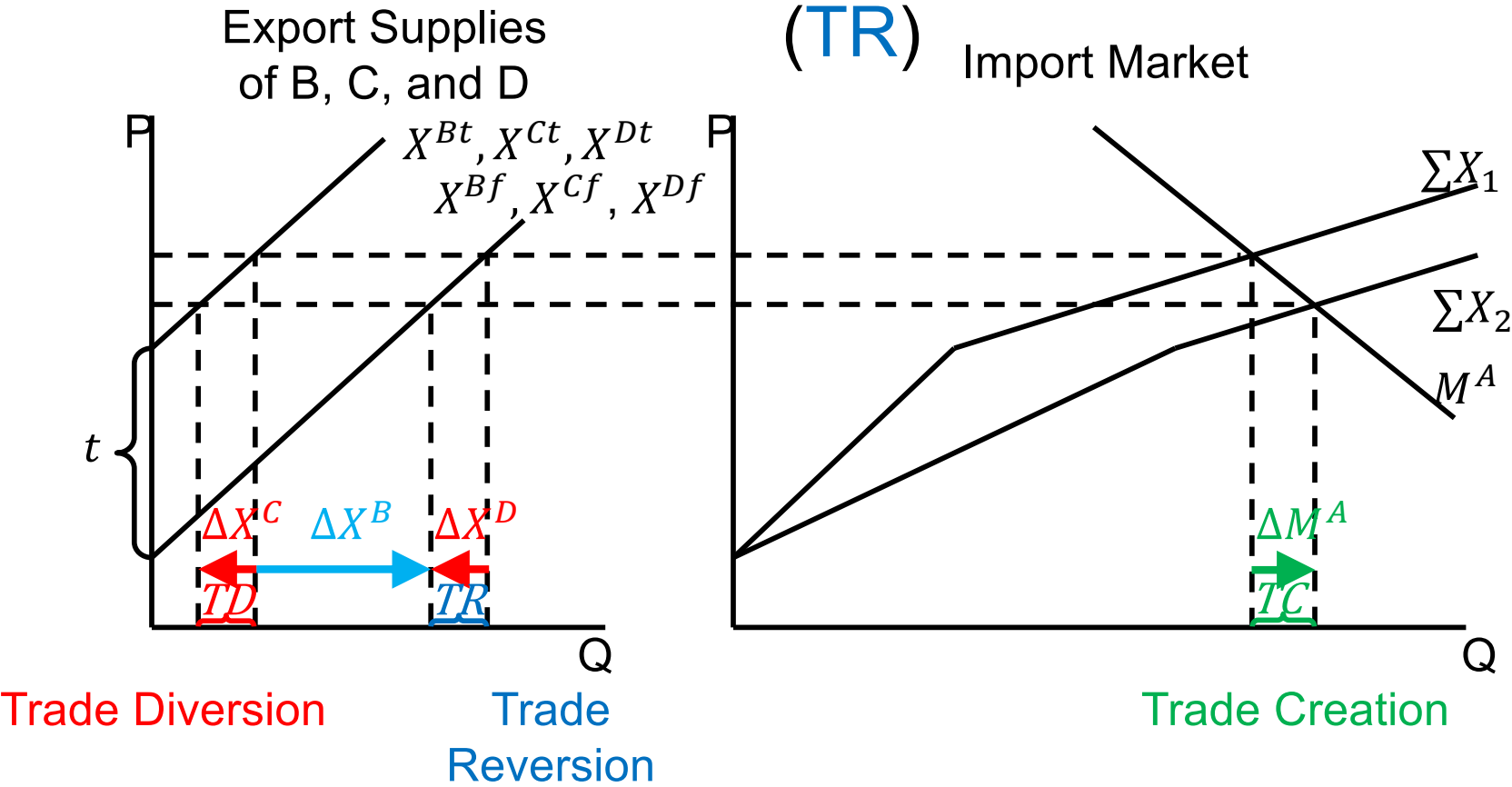
Export Supplies
of B, C, and D

Country B

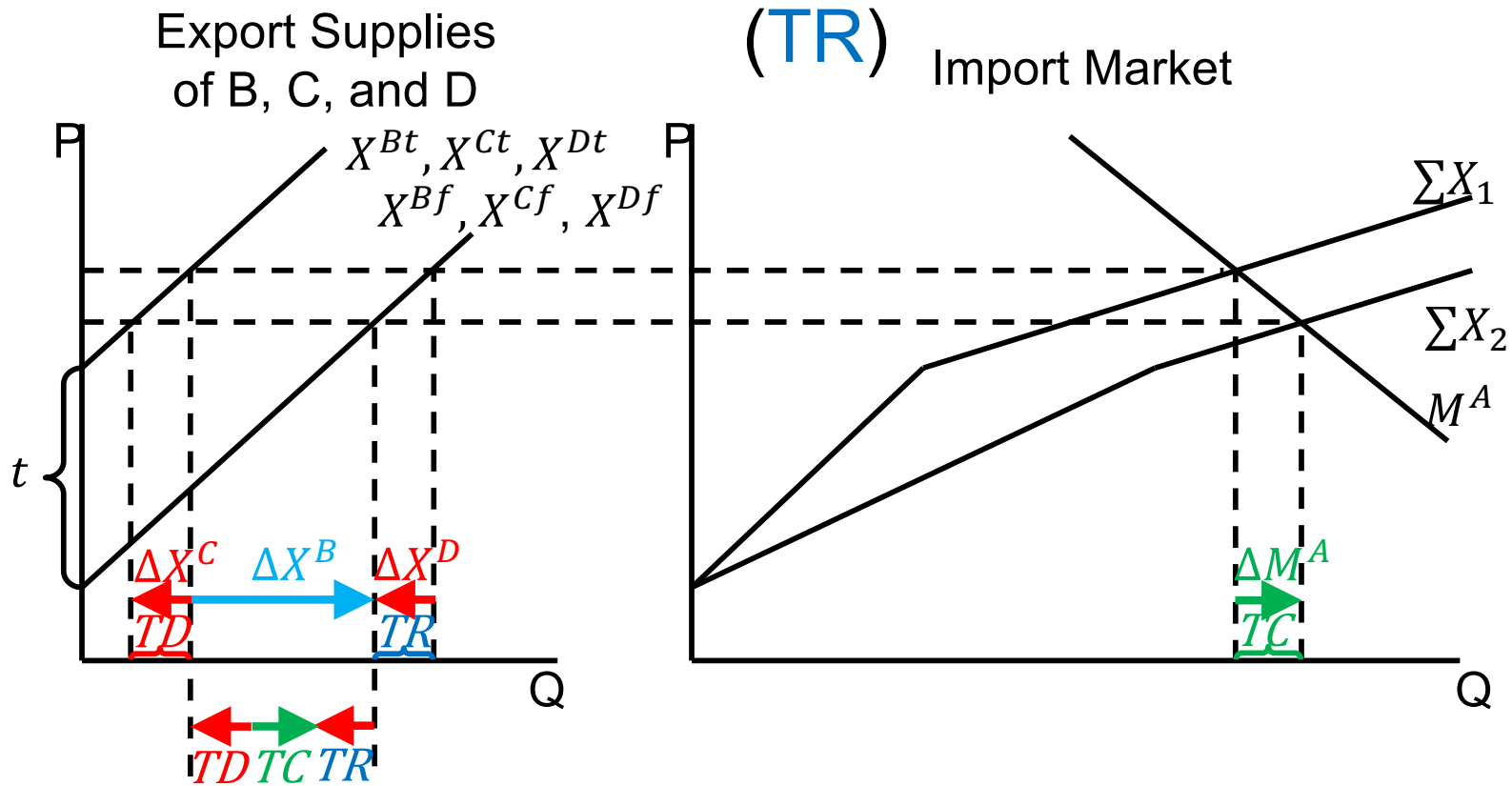
Import Market



Trade Creation (TC), Diversion (TD), and Reversion

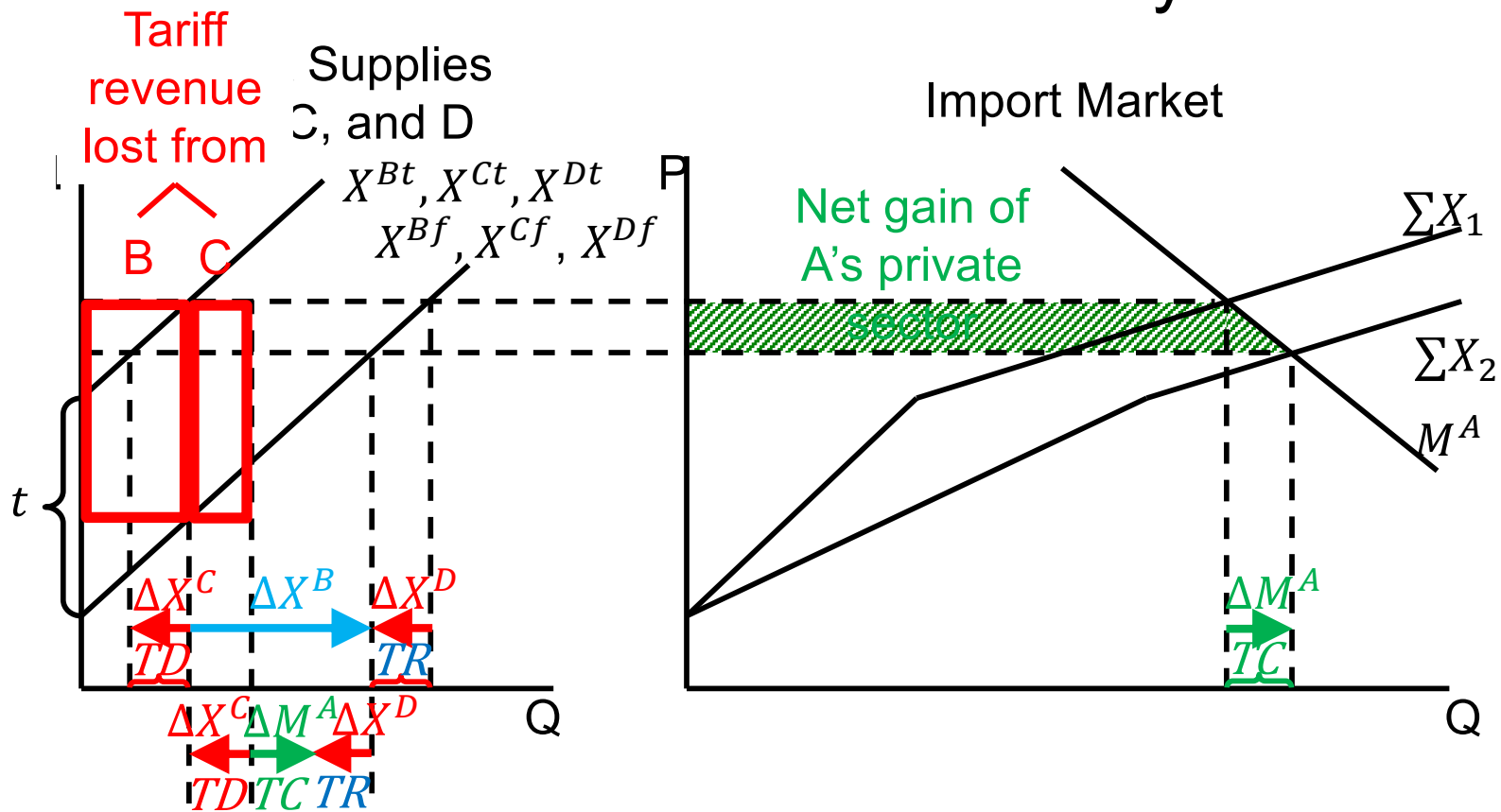


Trade Creation (TC), Diversion (TD), and Reversion



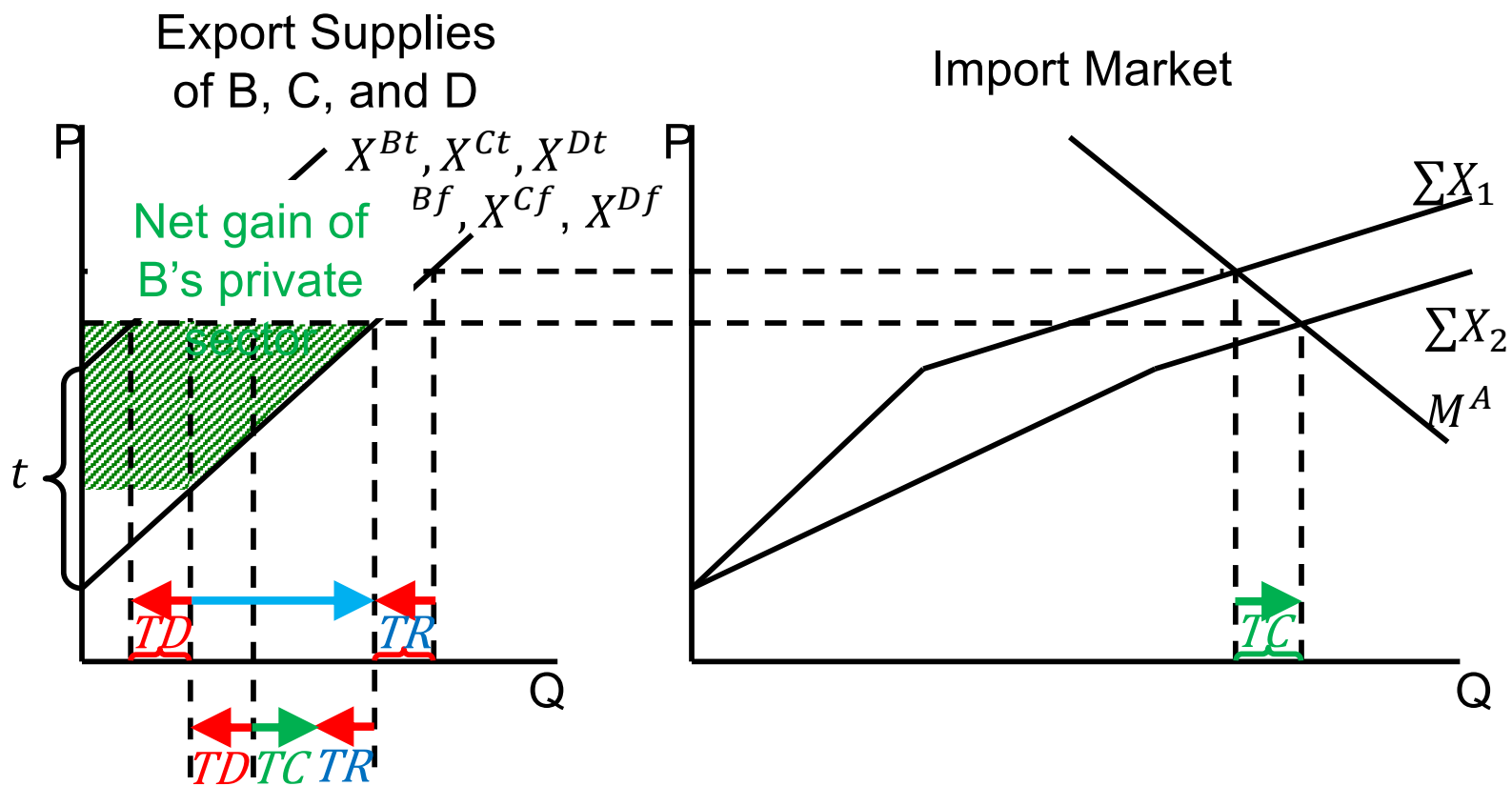
Note that ΔX^B , while a gain to Country B, is the sum of TC , TD , & TR , since $\Delta X^B = \Delta M^A - \Delta X^C - \Delta X^D$

Welfare Effects on Country A

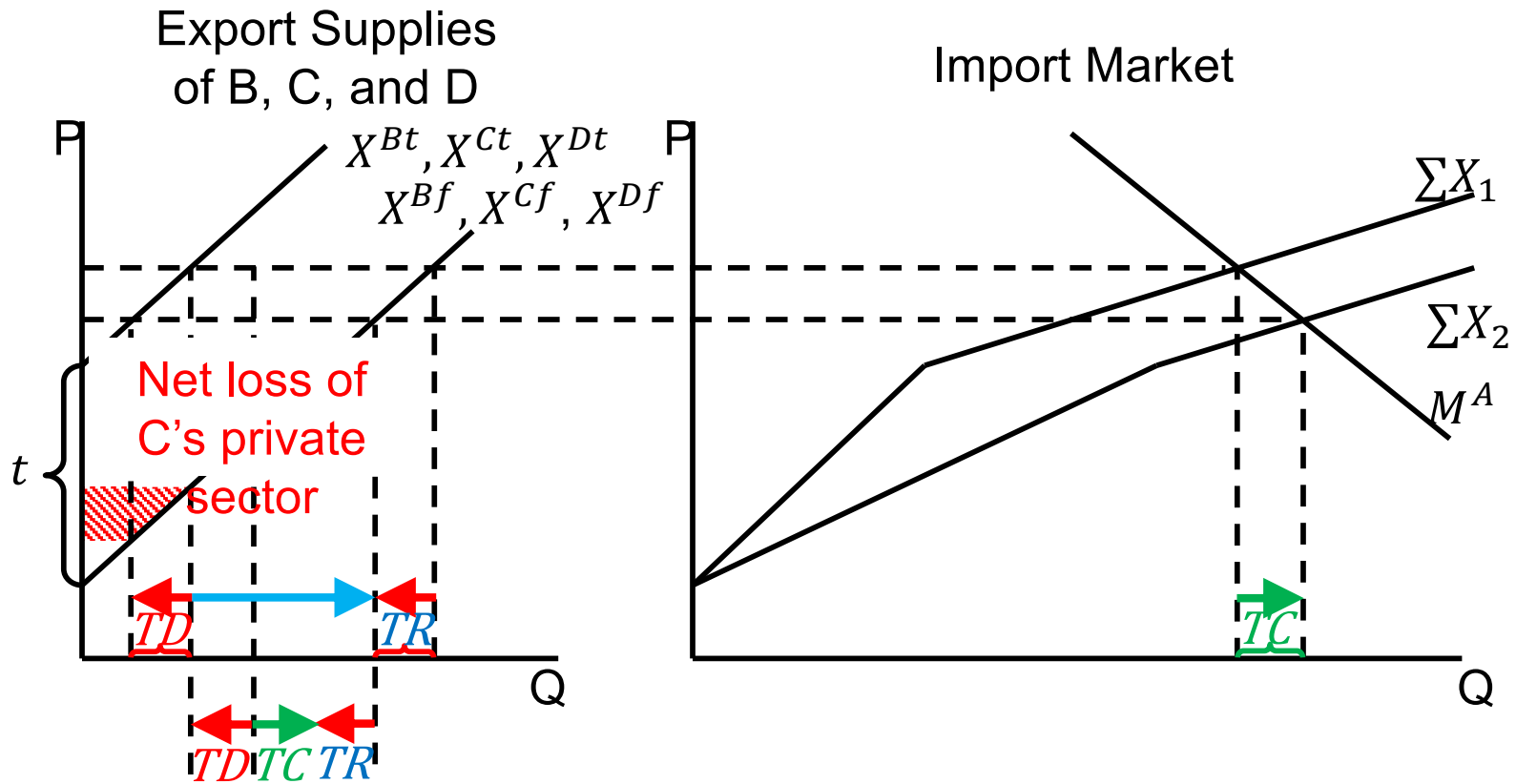


Note that trade reversion does not appear to affect A's welfare. I suspect this is an artifact of making export supplies from B and D the same.

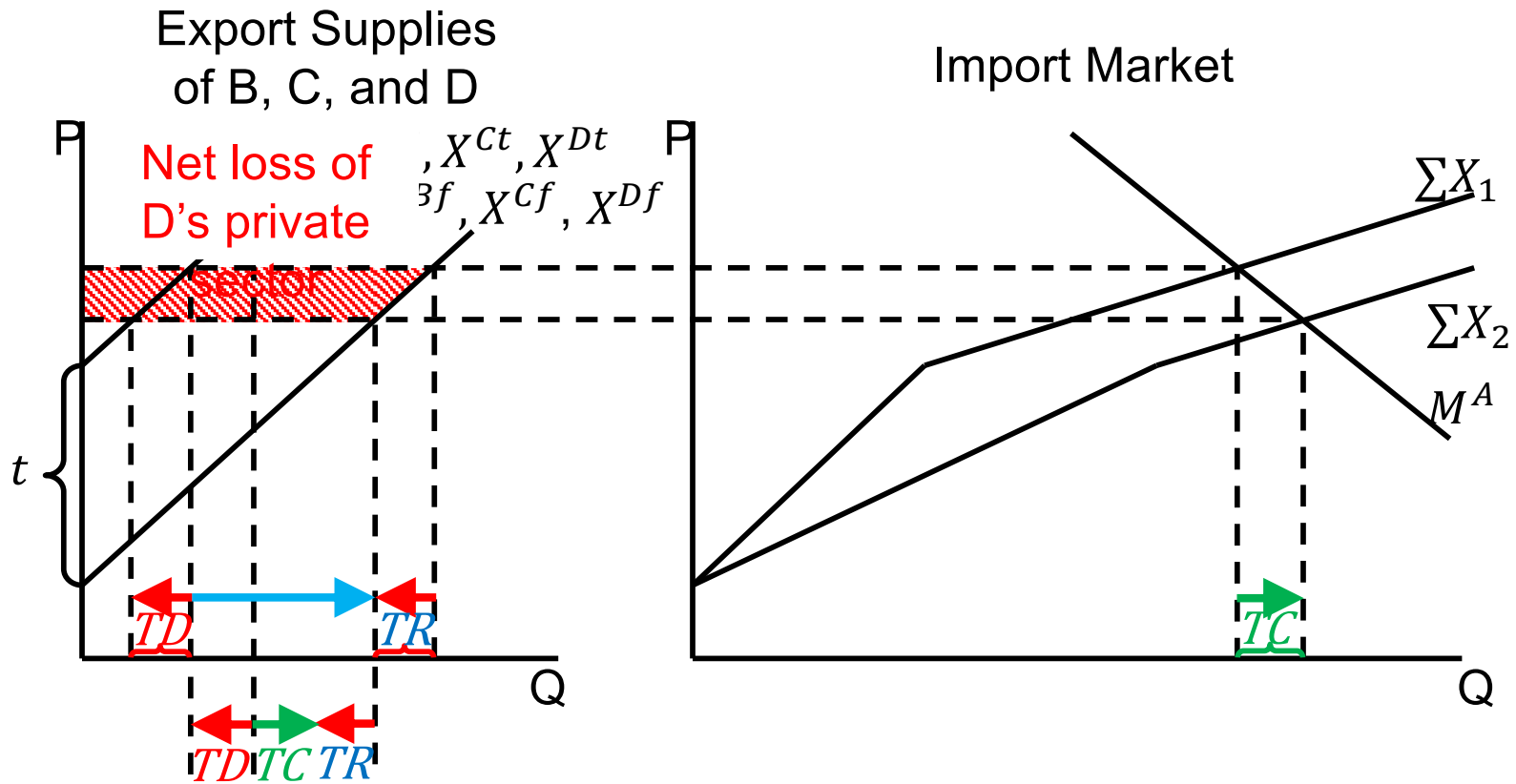
Welfare Effect on Country B



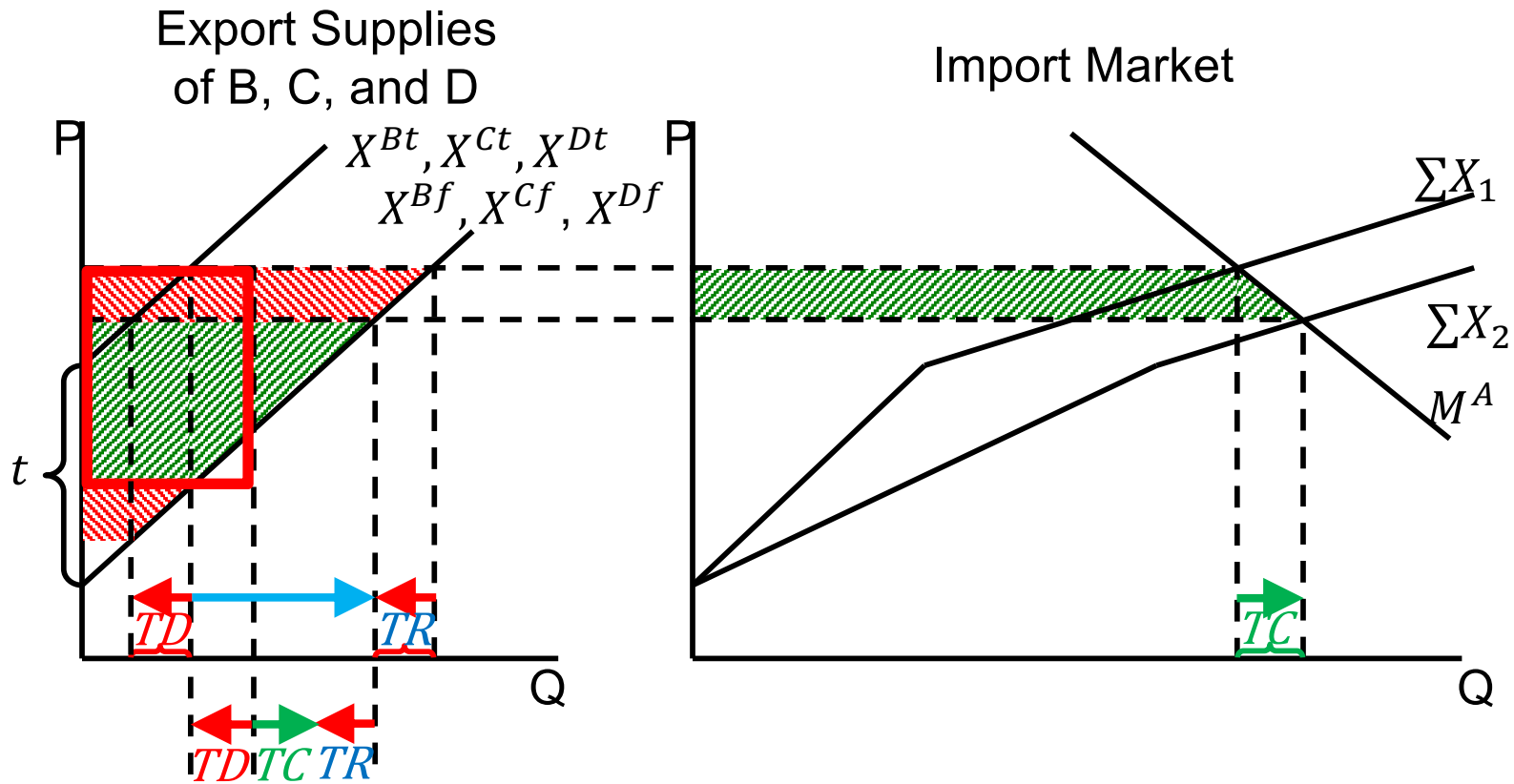
Welfare Effect on Country C



Welfare Effect on Country D

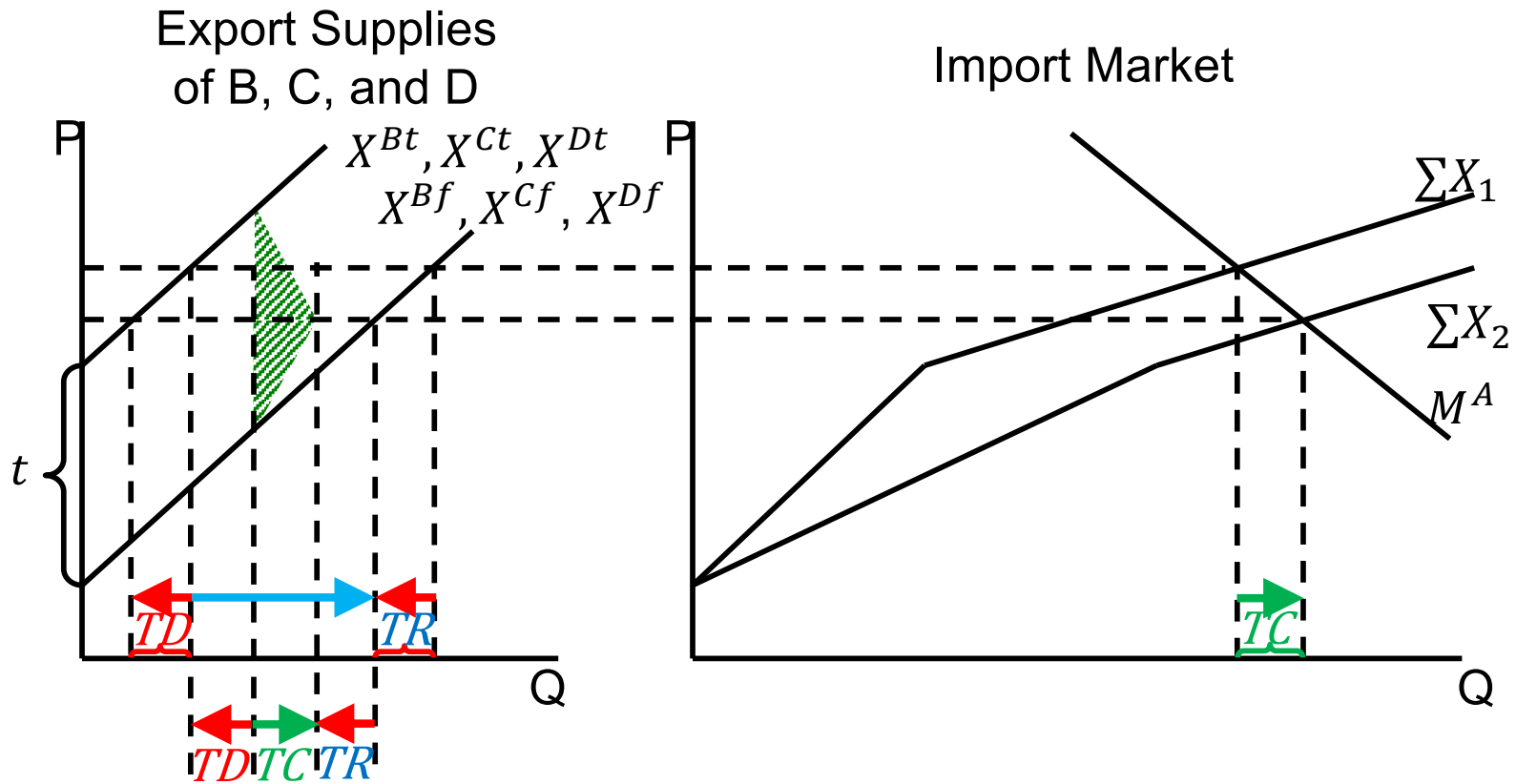


Welfare Effects on World

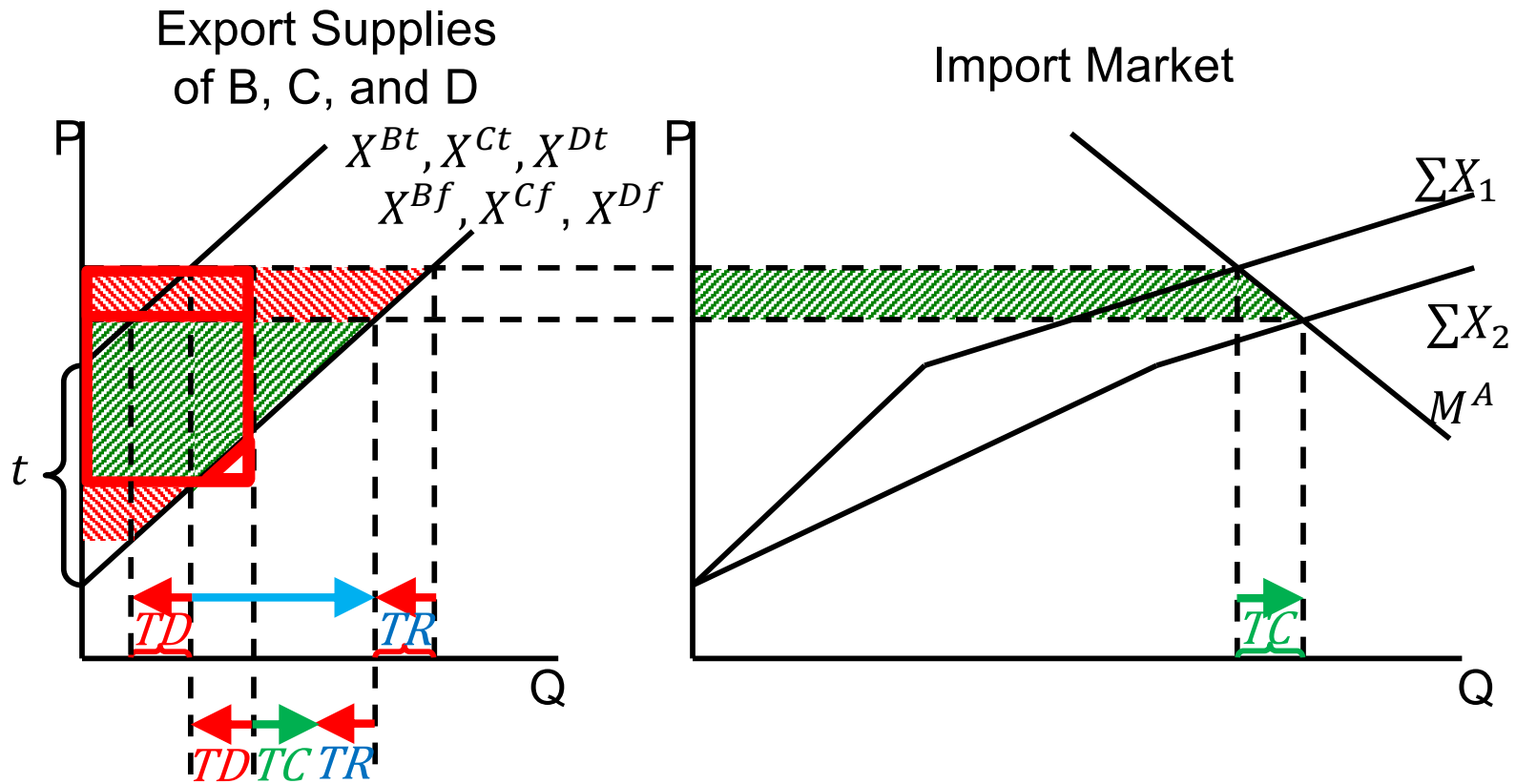


I claim that these gains and losses mostly cancel out to reduce to the following:

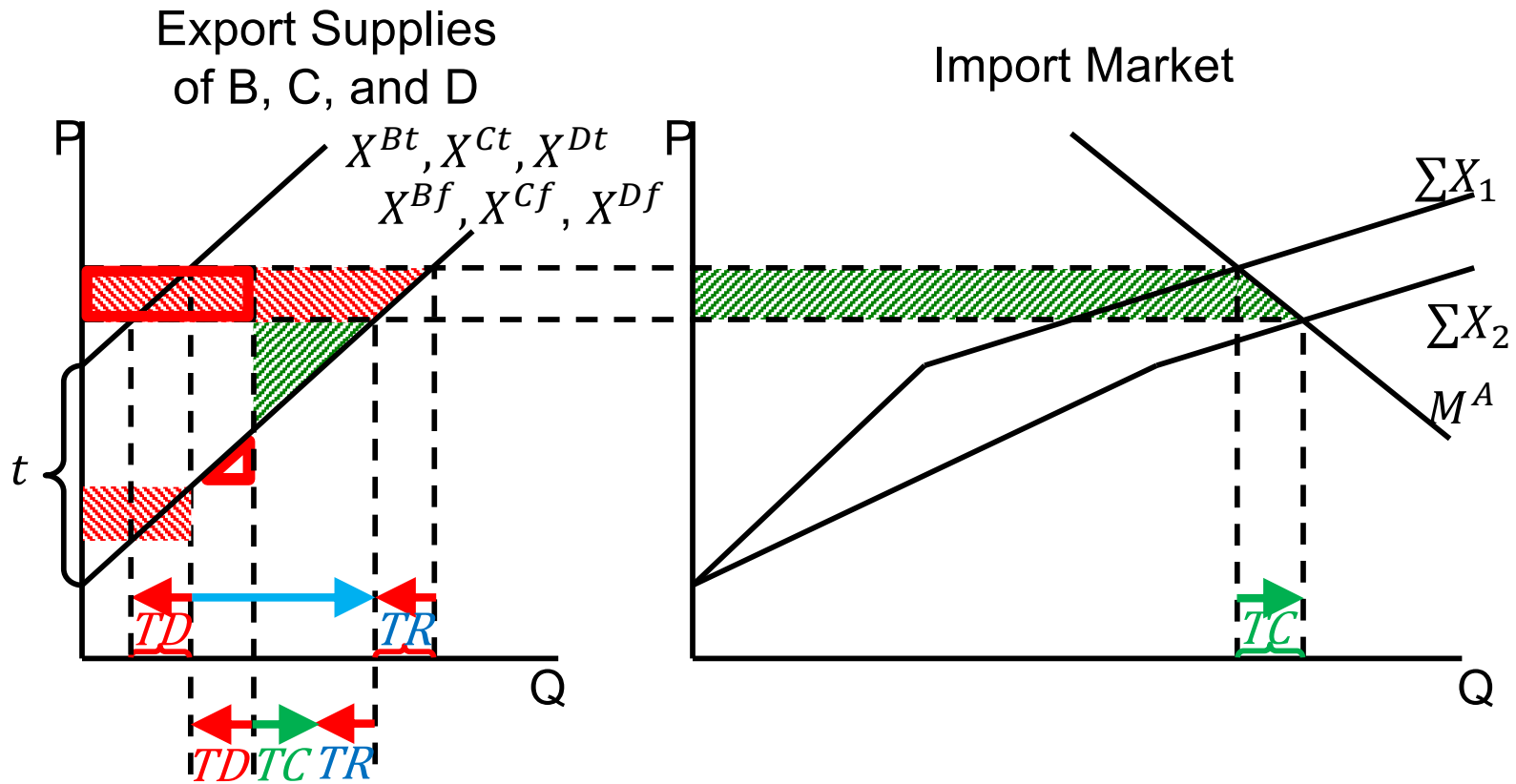
Welfare Effect on World



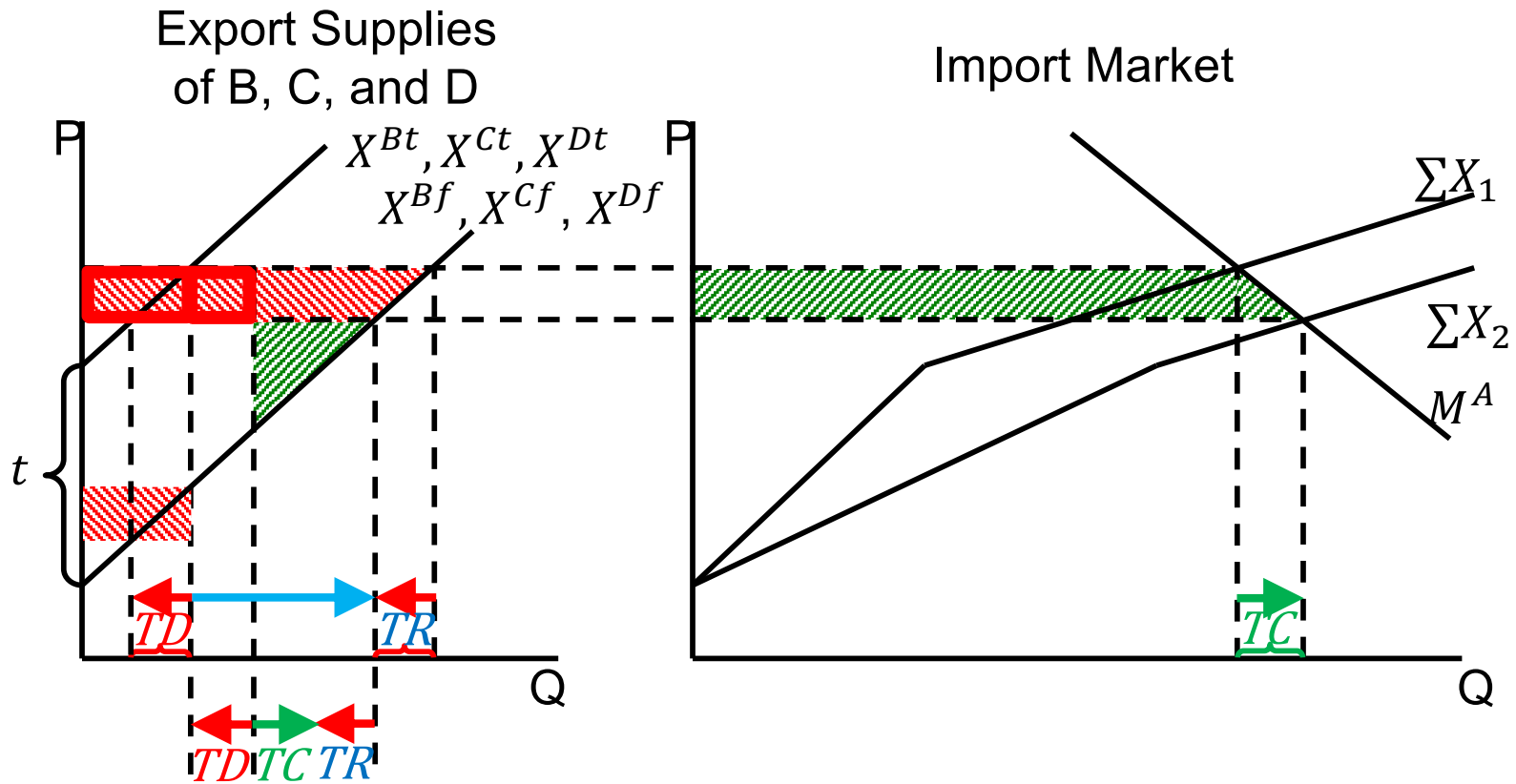
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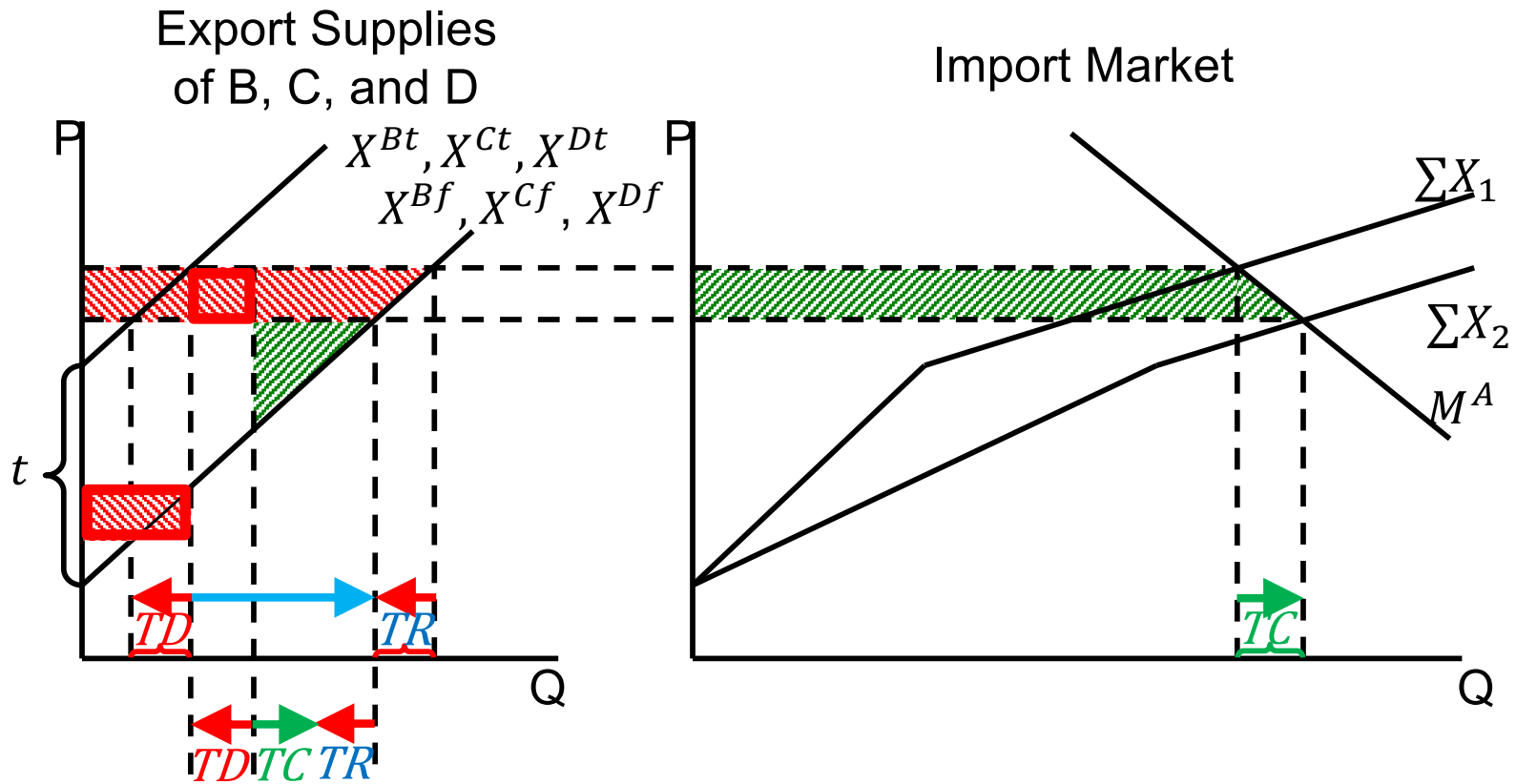
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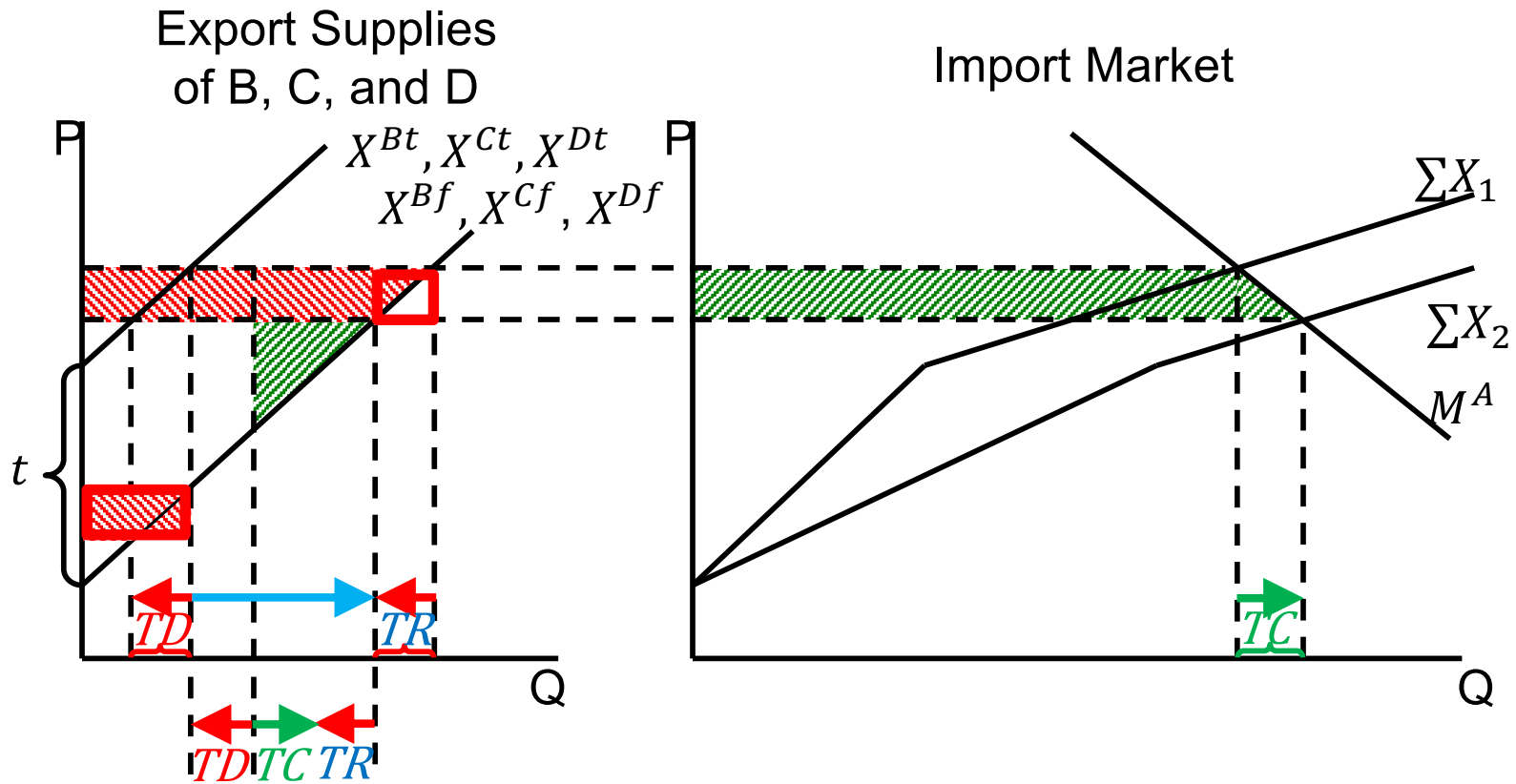
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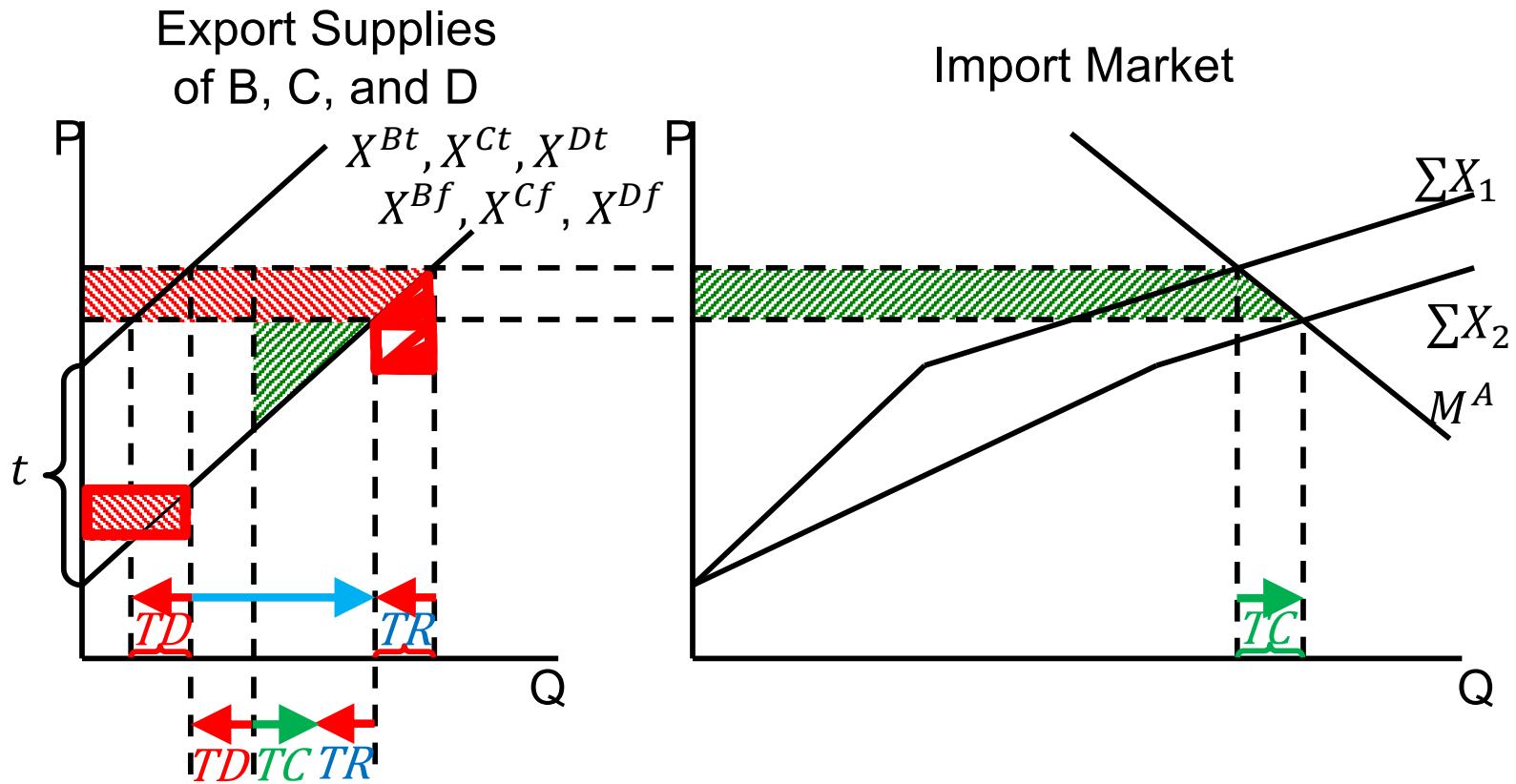
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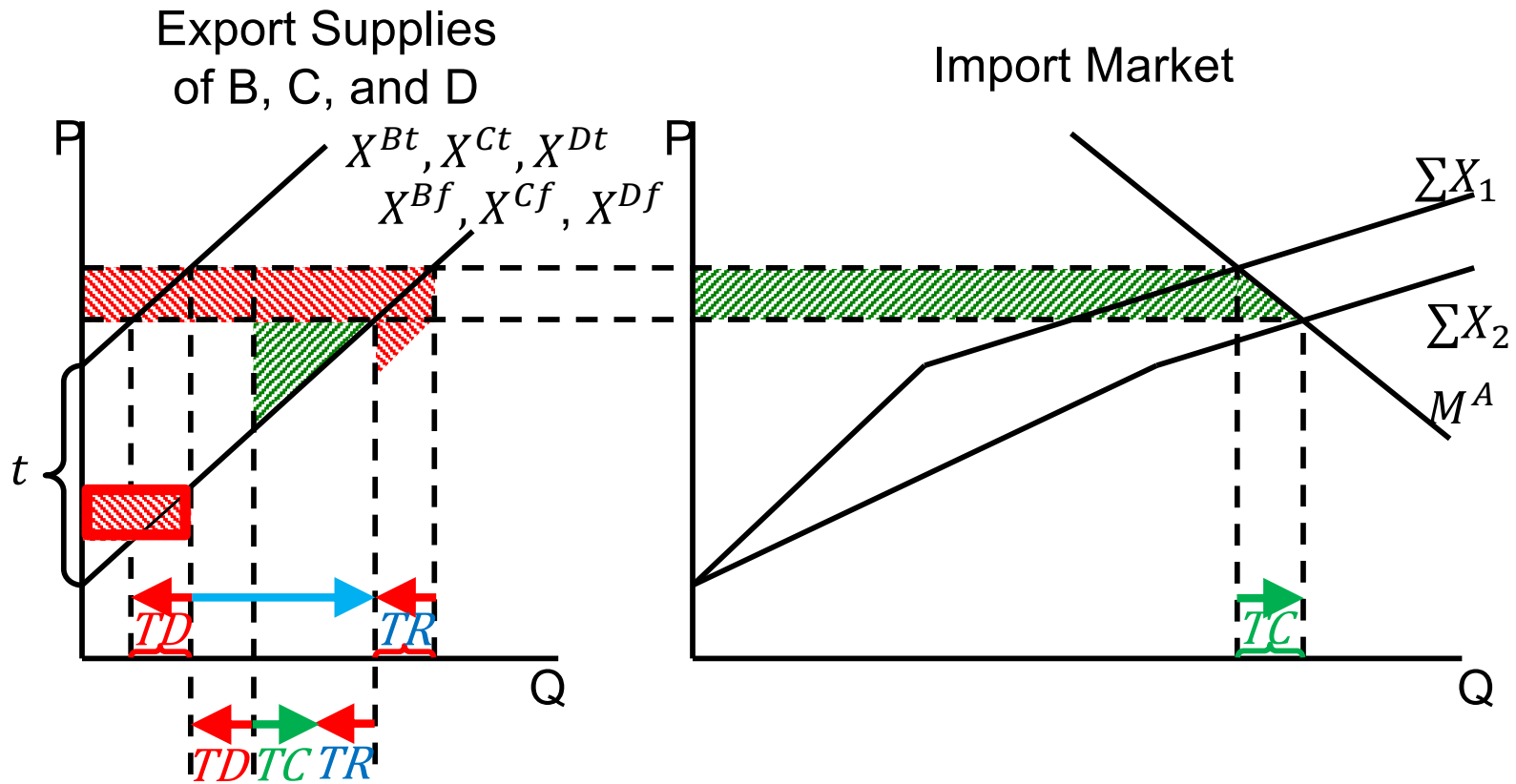
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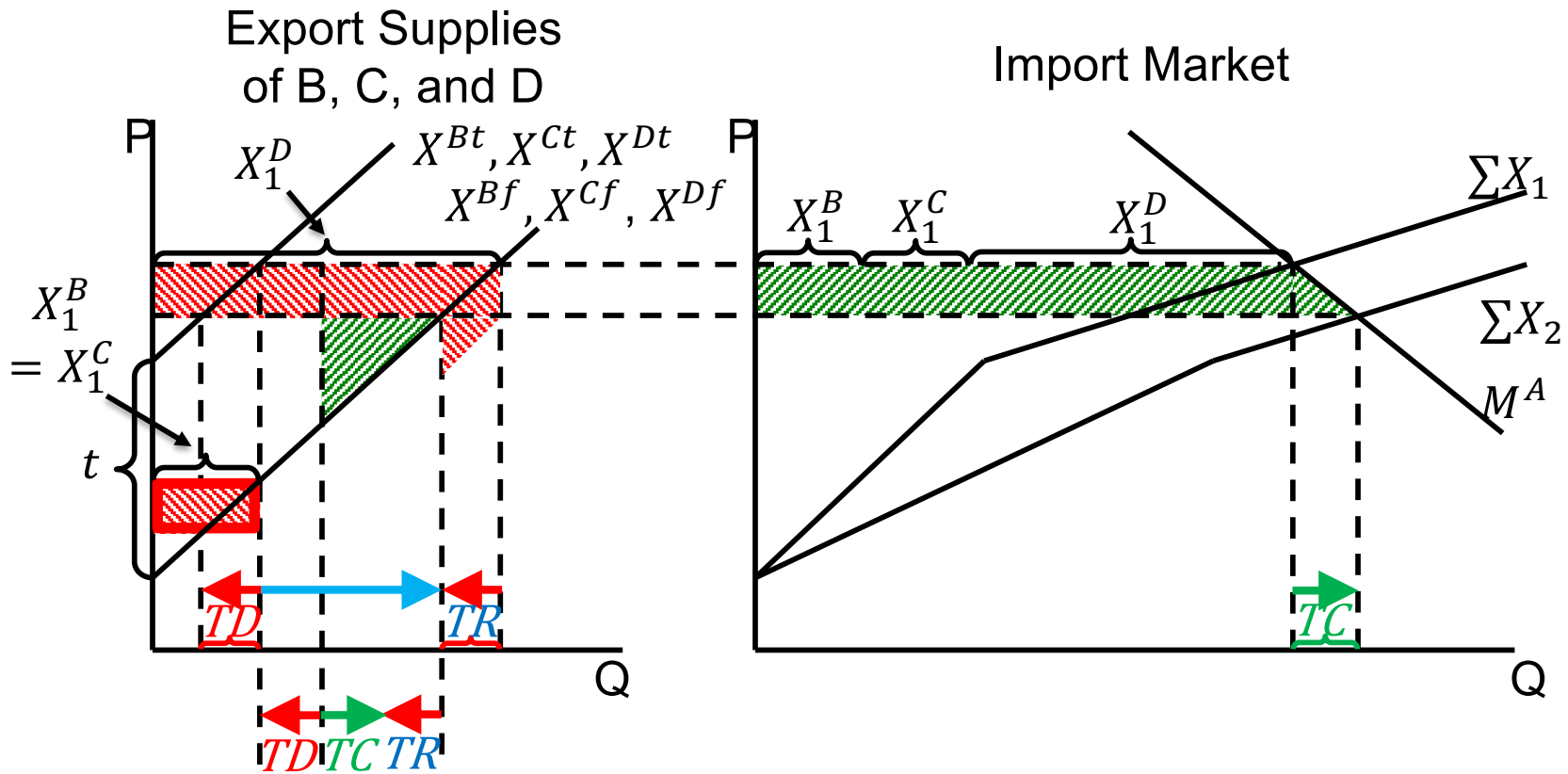
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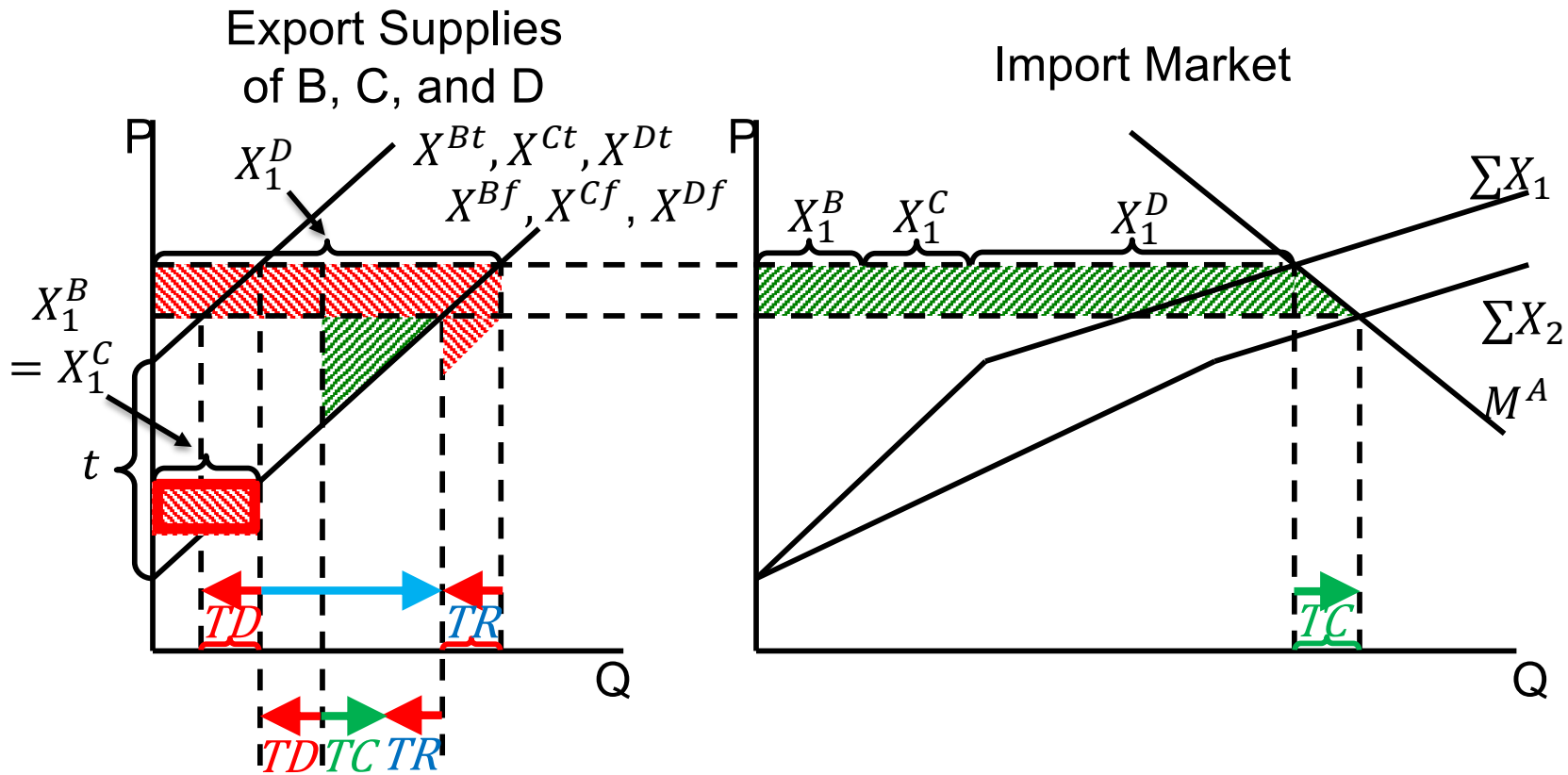
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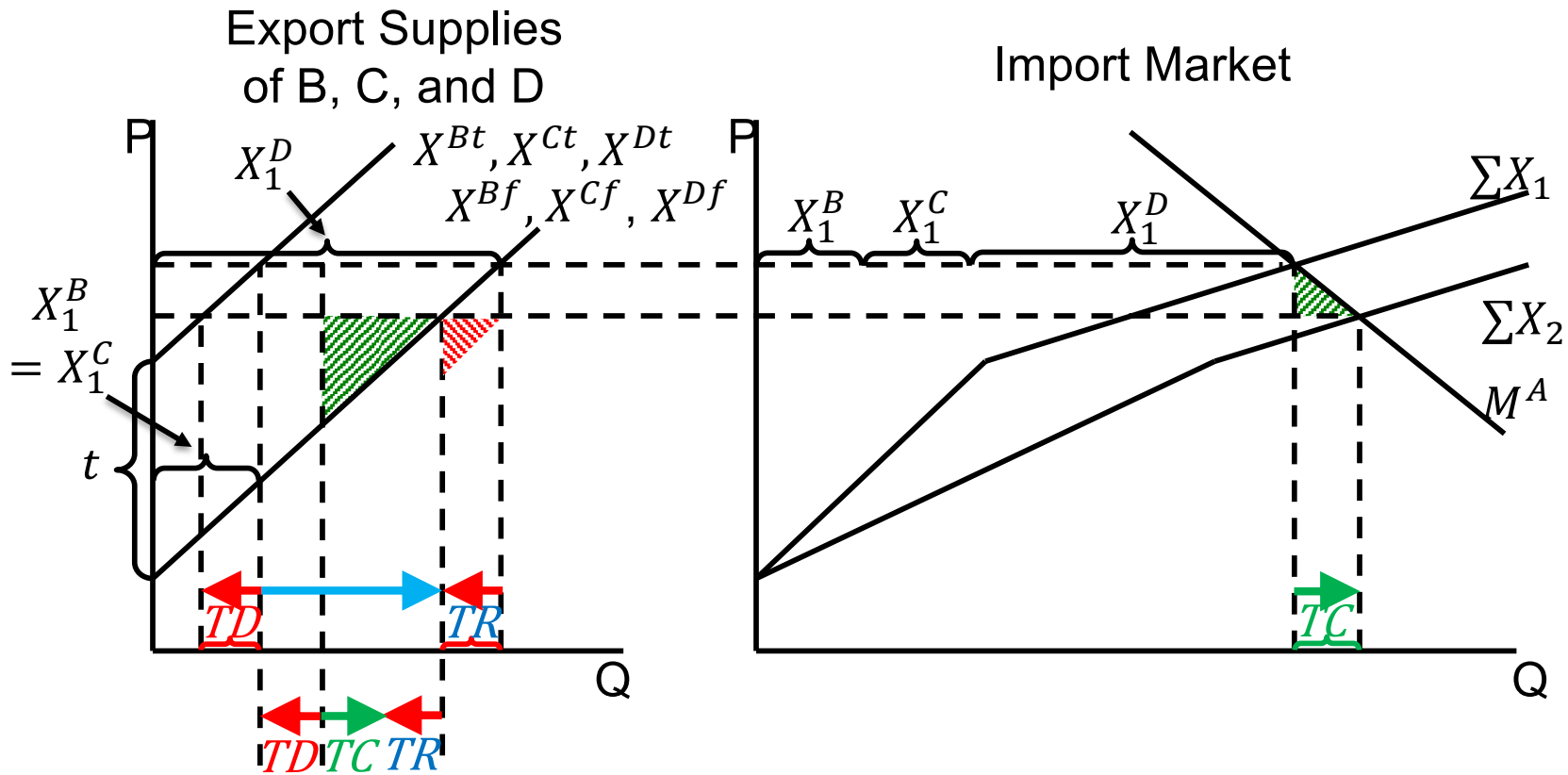
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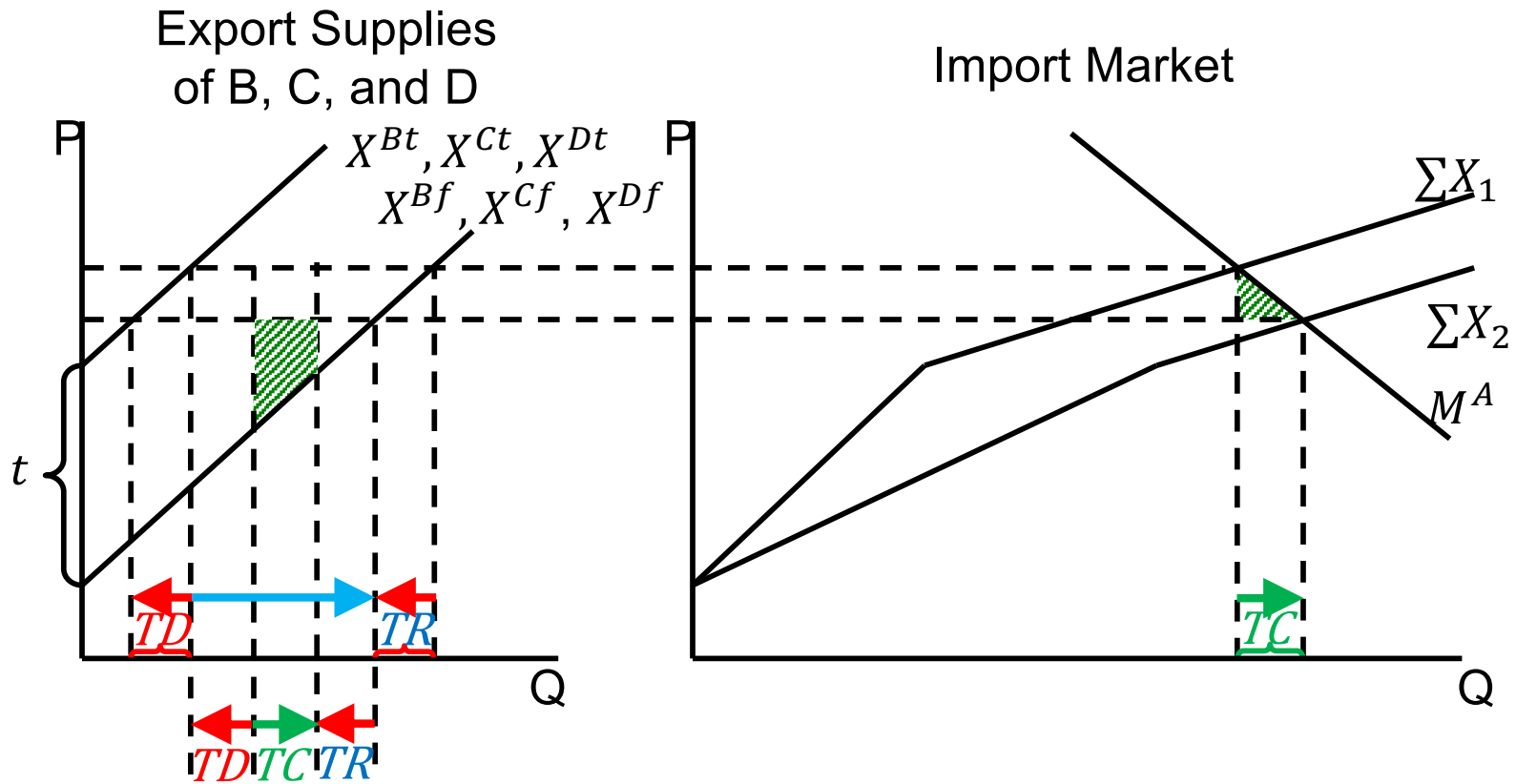
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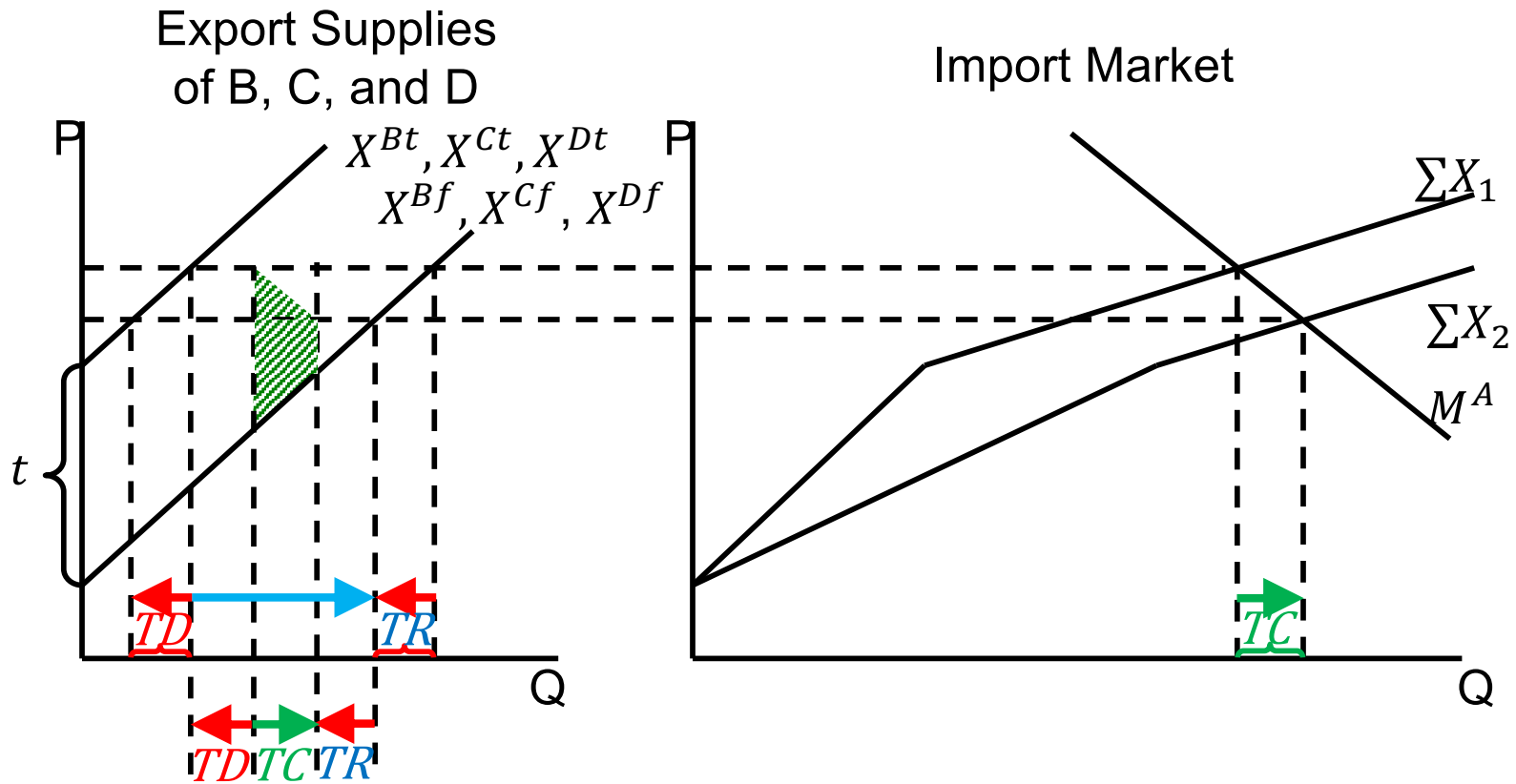
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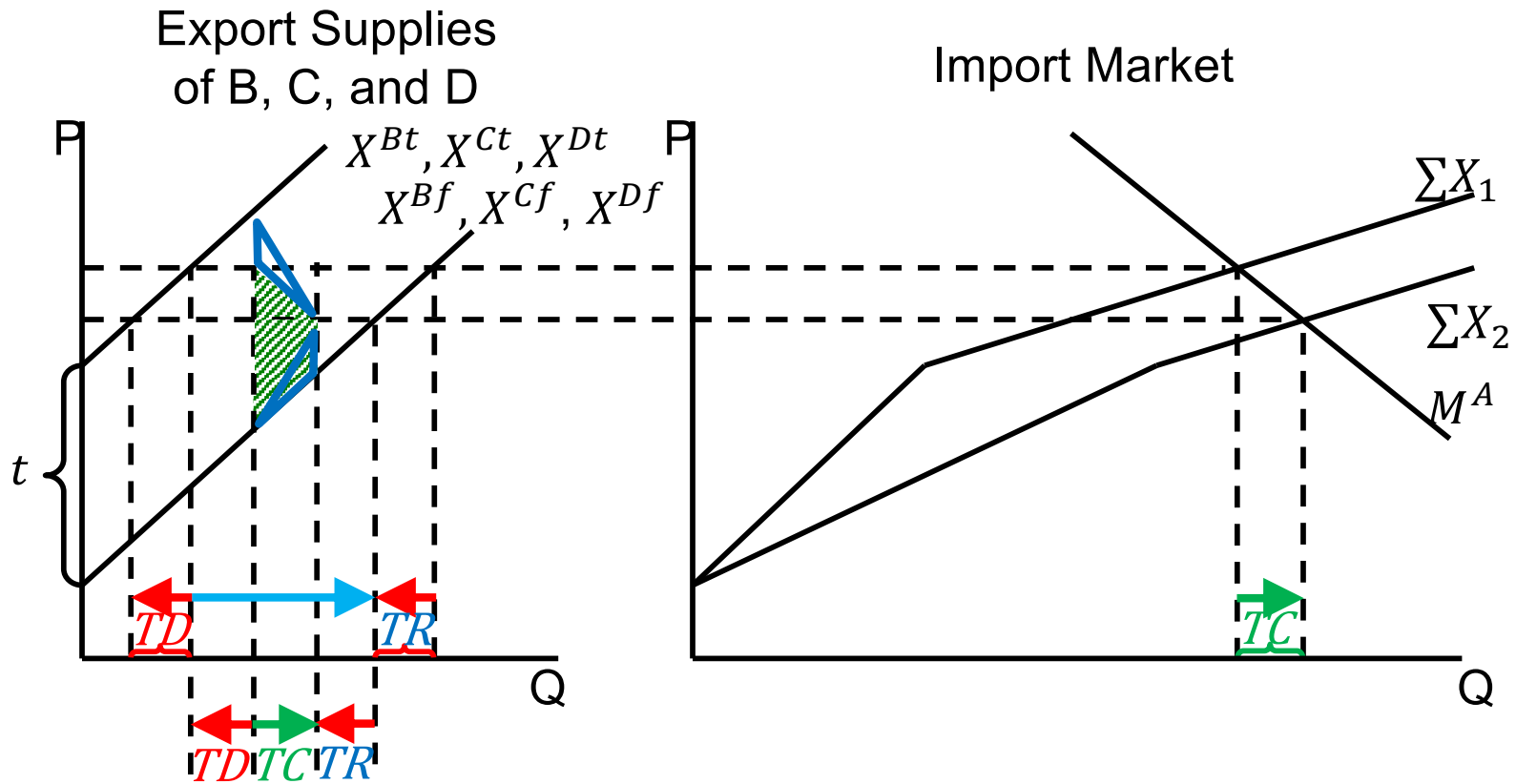
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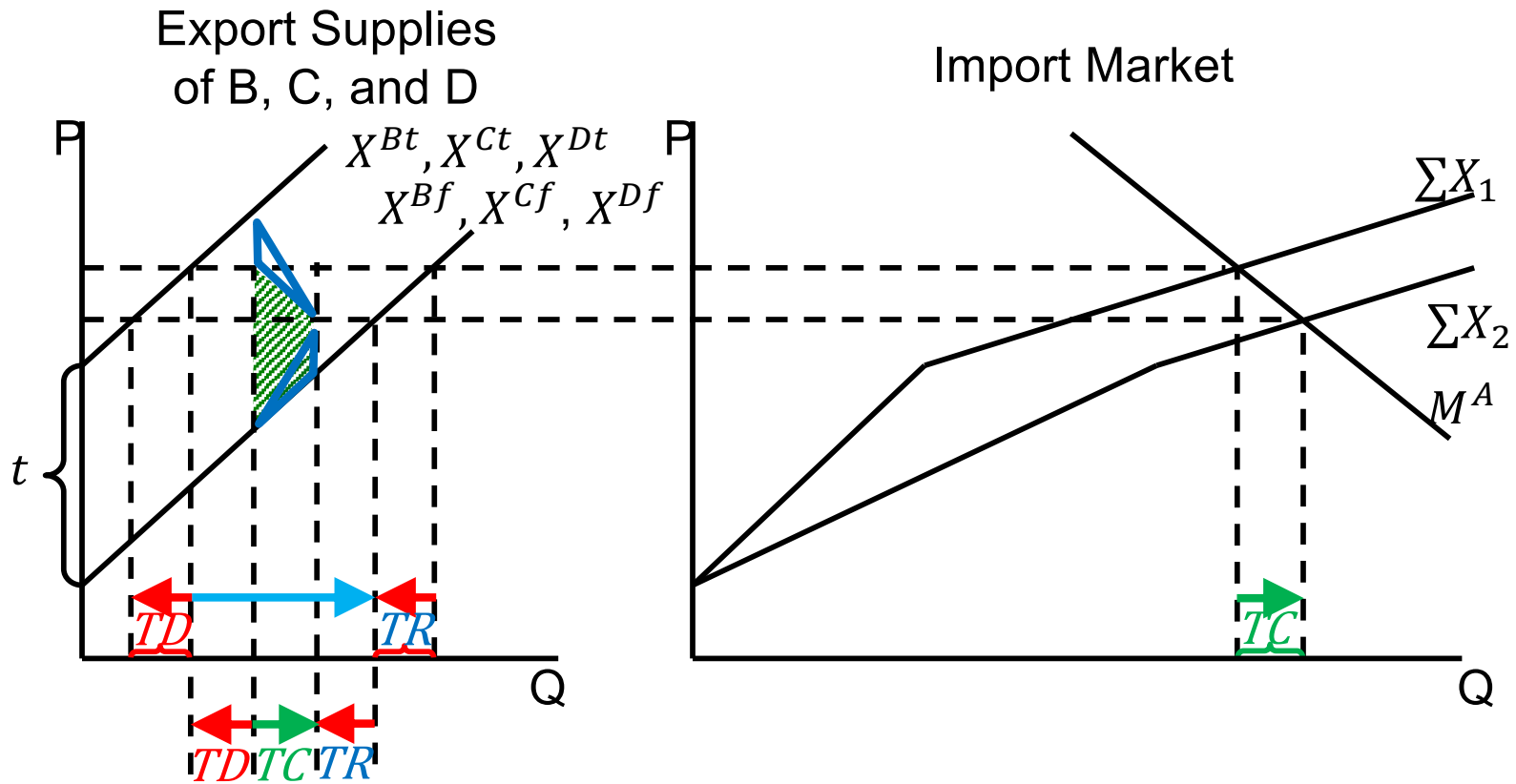
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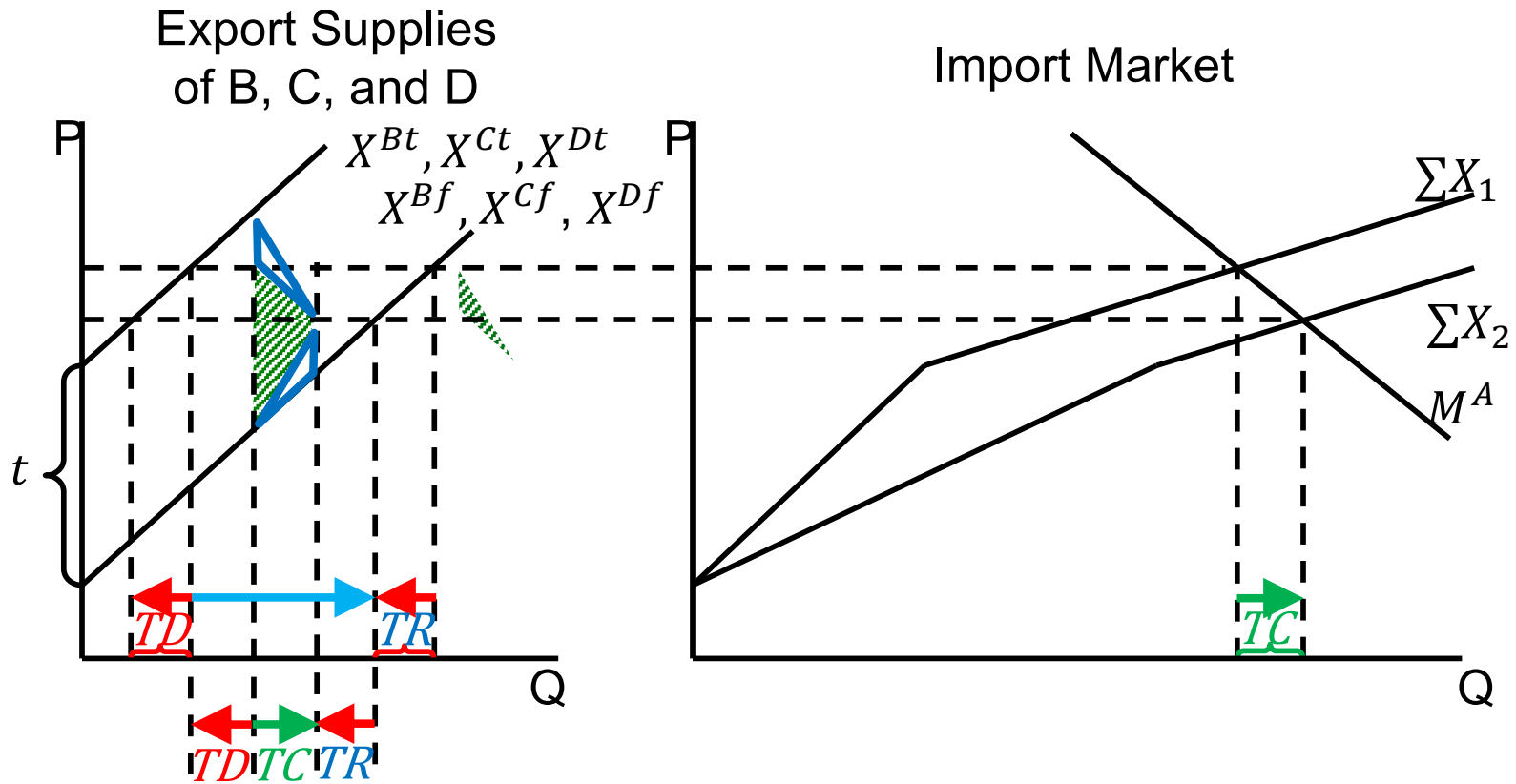
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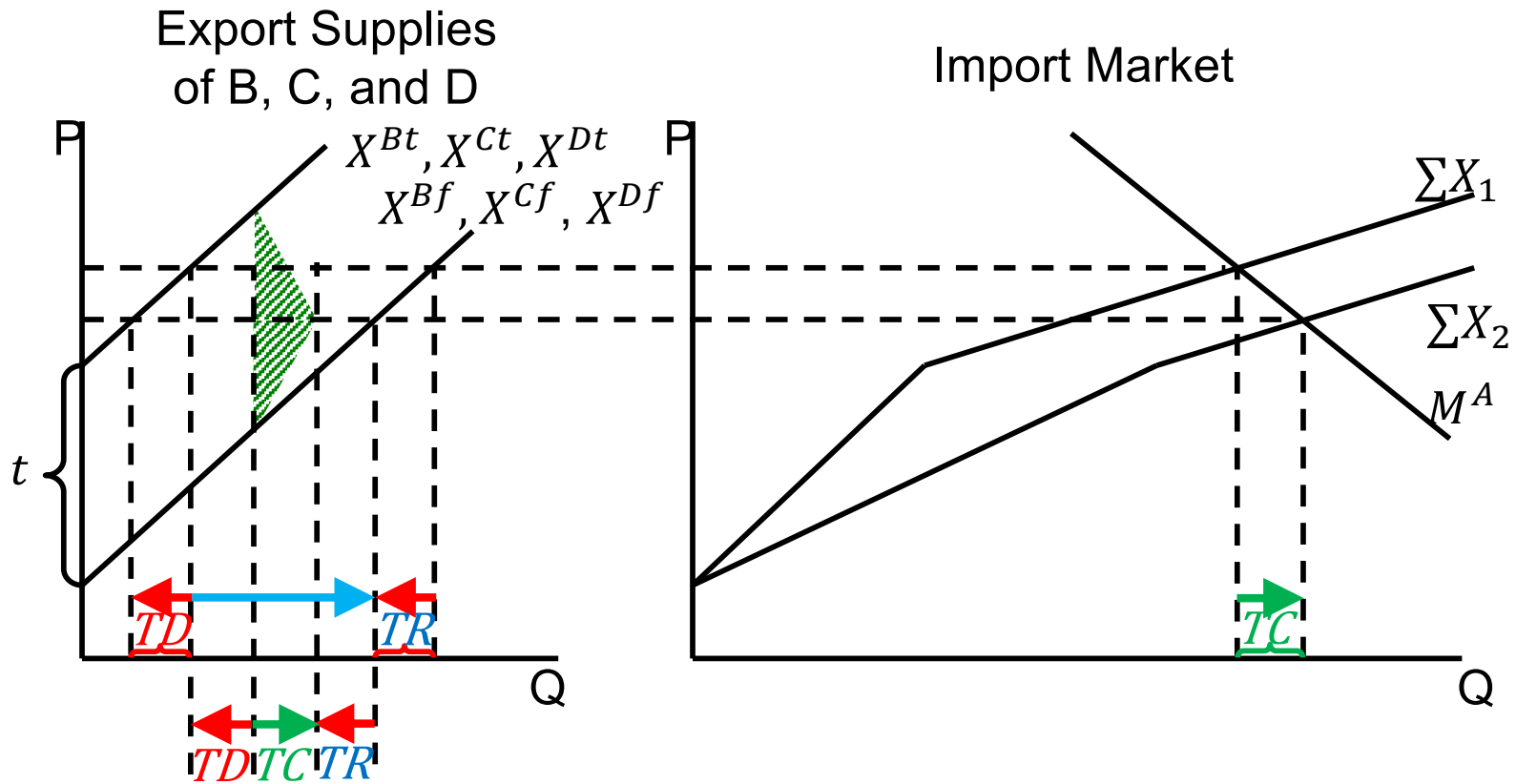
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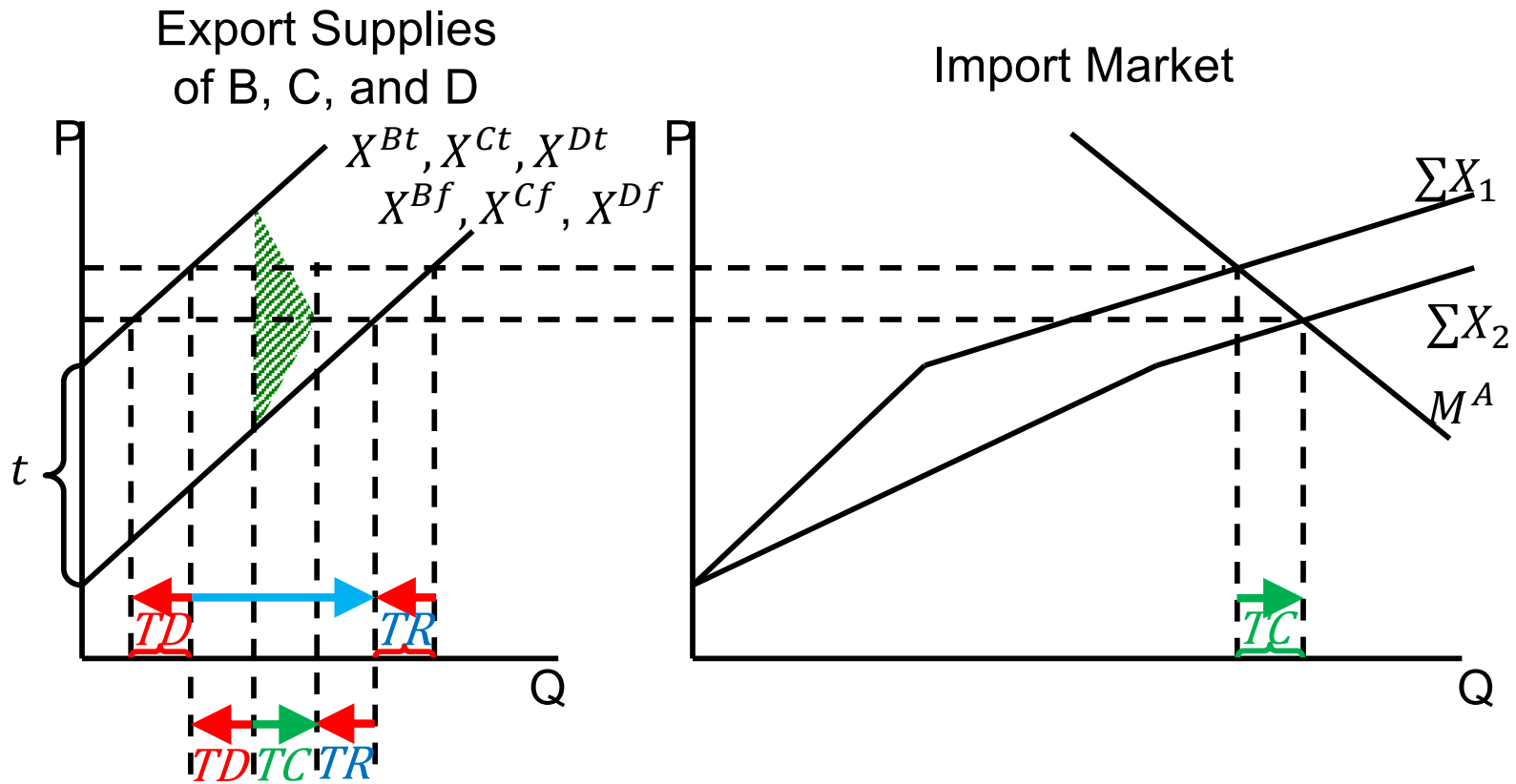
Welfare Effect on World



Welfare Effect on World



Welfare Effect on World



4-country case

- Result:
 - World welfare rises with second FTA, by amount depending on trade creation and the tariff
- Recall from model:

$$\Delta W^W = \frac{1}{2}TCt + \frac{1}{2}(TR - TD)t$$

- Here, because we've assumed countries B and D are the same, $TR=TD$

$$\Delta W^W = \frac{1}{2}TCt$$

4-country case

- In general, $TR \neq TD$
- Which is larger depends just on country size, size both face the same price change.

$$\Delta W^W = \frac{1}{2}TCt + \frac{1}{2}(TR - TD)t$$

- If the new partner is smaller than the old, $TR > TD$, and world gain will be larger
- If new partner is bigger than old, then $TR < TD$ and world gain will be smaller and perhaps a loss.

Conclusion

- Analysis of FTAs shouldn't treat each independently of FTAs that already exist
- Sequencing of FTAs can matter.

Pause for Discussion

Questions on Deardorff & Sharma

- Why is adding a second FTA not harmful for the world in the graphs, but may be harmful in the world in the equations?

Outline

- Background
- Simplest model: horizontal supplies
- Upward-sloping supplies
 - 3-country case, in graphs
 - Somewhat more general case, in equations
 - 4-country case, in graphs
- **Are FTAs Beneficial?**

Are FTAs Beneficial?

- My own work suggests that they usually are, though the benefits are not huge
- But many (not economists) disagree
- Much has been said about NAFTA
 - It's political reputation has been negative
 - Labor unions
 - Democrats
 - Trump
 - Economists have been more positive
 - See Posen (economist and President of Peterson Institute of International Economics)

Are FTAs Beneficial

- Posen's points
 - Consumers in all three countries have gained.
 - Workers have suffered, but not from NAFTA.
 - “Recent research has found that, on average, for every 100 jobs US manufacturers created in Mexican manufacturing, they added nearly 250 jobs at their larger US home operations...”
 - Until the financial crisis of 2008, US unemployment was lower after NAFTA than before.
 - Concern that displaced Mexican farmers would come north were not justified, as border apprehensions have declined steadily since 2000. The recent surge of minors crossing from Central America has nothing to do with NAFTA.
 - Critics estimate job losses due to NAFTA of 45,000 a year. But that is less than 0.1 percent of turnover.

Pause for Discussion

Questions on Posen, “The Errors of Conservatives ...”

- How does Posen counter the argument against new trade agreements that they will have the same harmful effects as the NAFTA?
- Posen seems to accept the critics' claim that the NAFTA caused 45,000 job losses in the US per year, but seems not to care. Why?
- What were some of the other claims by critics of the NAFTA, and how does Posen respond to them?

Are FTAs Beneficial

- Russ paper
 - Prompted by USITC report on trade agreements negotiated under Trade Promotion Authority (TPA), as TPA was set to expire
 - Covers 12 bilateral FTAs and 2 regional ones, NAFTA and CAFTA-DR
 - Results:
 - They “resulted in the US economy being one half of a percent bigger than what it would have been without the agreements in place”
 - Responsible for “almost half a million additional jobs”

Questions on Russ

- Can you tell from this what TPA was?
- Does the study cover all agreements that were done under TPA, and all aspects of the ones that it does cover?
- How large were the effects of the FTAs according to the reported study?

Extra time?

