Trade Policies:

Extension

EE451

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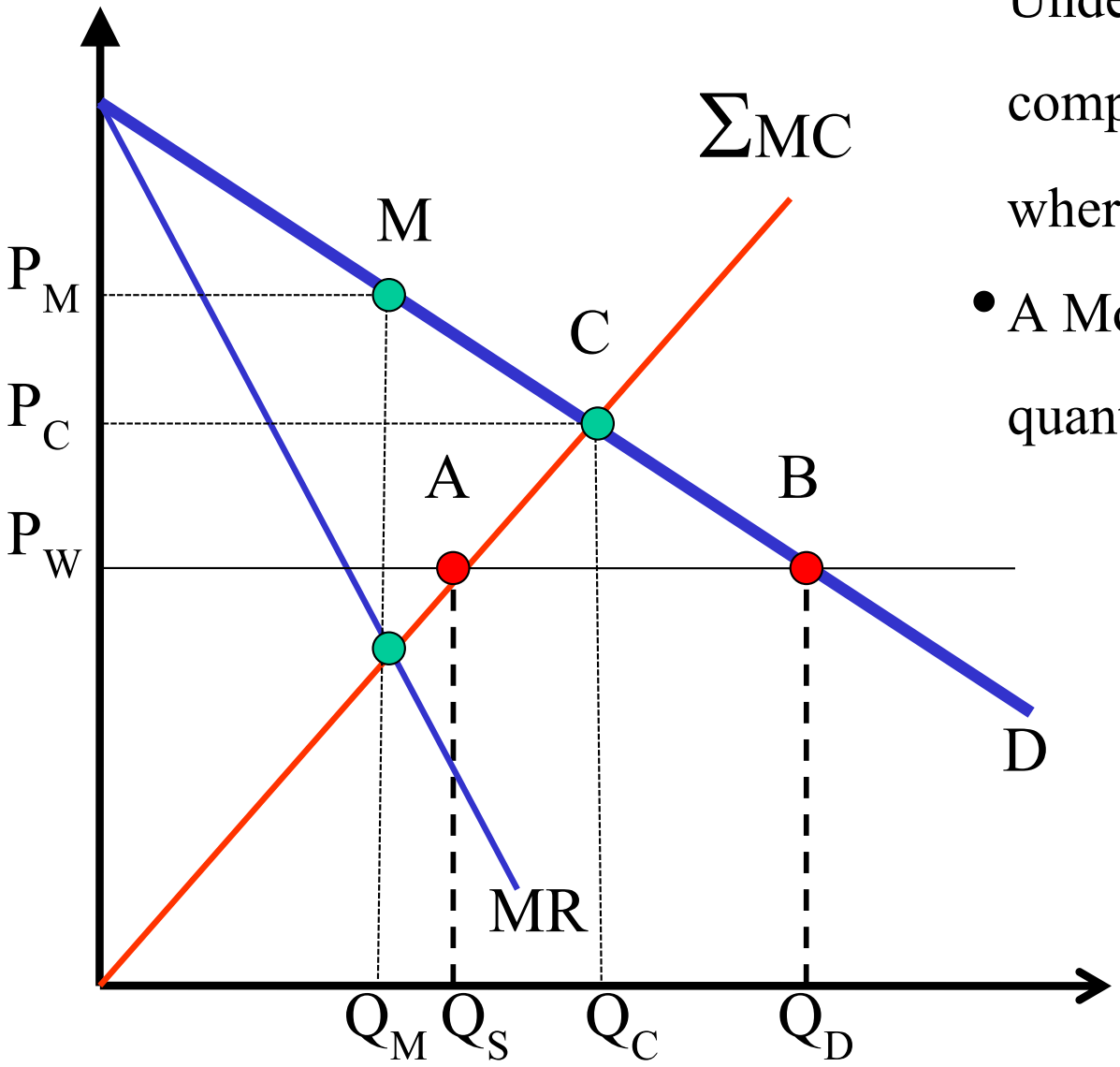
Outline

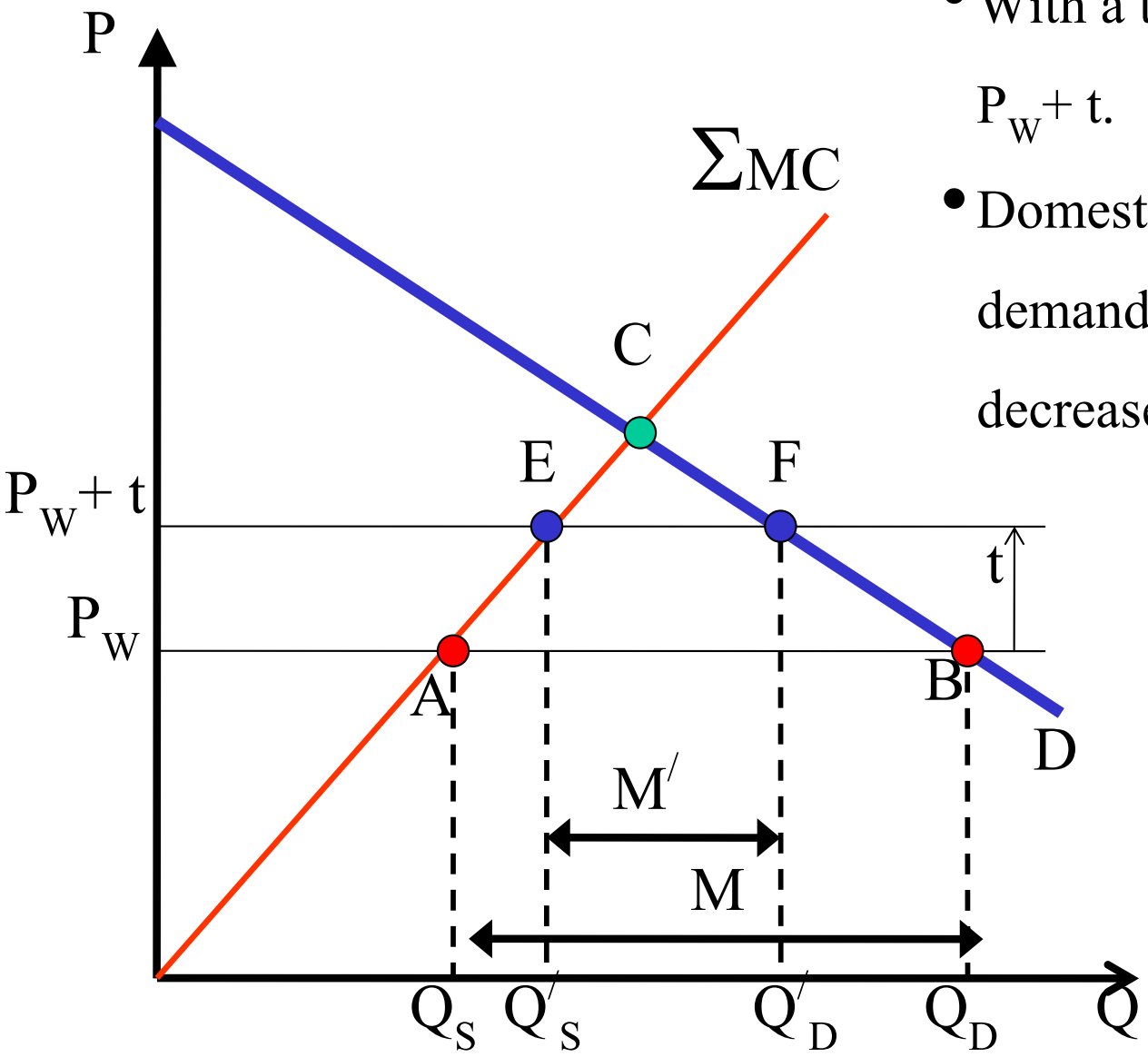
- Tariffs and Quotas with Home Monopoly
  - Free Trade equilibrium
  - Effect of Home Tariff
  - Effect of Home Quota
- Tariff to extract foreign monopoly profit
- Strategic Trade Policy
- Policy Response to Dumping
- Trade and Externalities

Home Monopoly with Free Trade



- Under autarky, a perfectly competitive market would produce where $\Sigma MC = D$ giving P_C and Q_C.
- A Monopolist produces at a lower quantity, Q_M, and a higher price, P_M.
- Under free trade, the Monopolist will take fixed world price, P_W, and set it equal to ΣMC at, Q_S. Imports = $Q_D - Q_S$.

Home Monopoly with tariffs

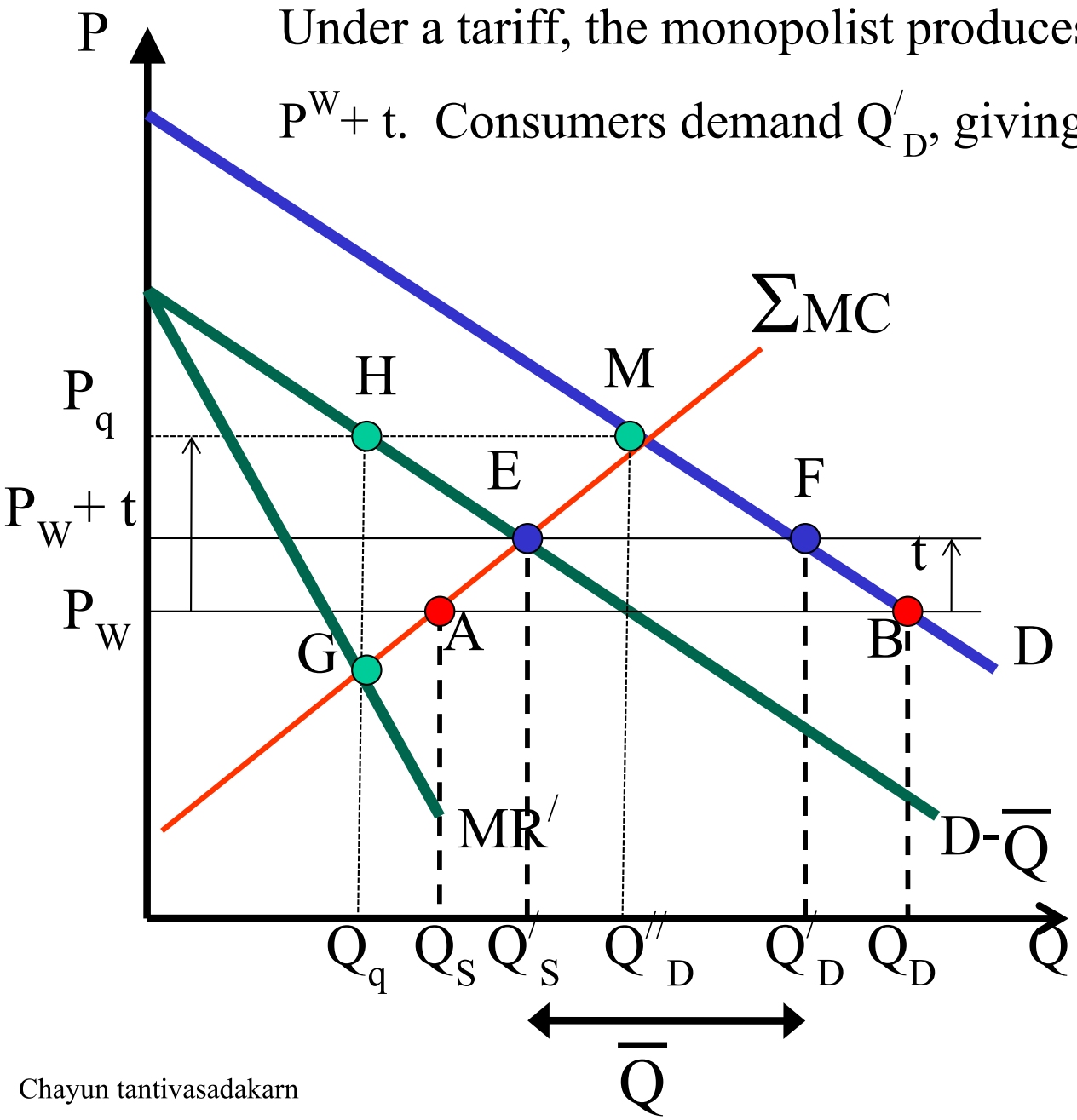


- With a tariff, price increases from t to P_W + t.
- Domestic output increases to Q'_S and demand decreases to Q'_D. Imports decrease from M to M′.
- The welfare effects are the same as the perfectly competitive case.

Home Monopoly with quotas

- Replace a tariff with an equivalent quota.
- The quota will end up with higher prices for Home consumers since it allows the monopolist to keep its market power, which we know leads to higher prices.
- This is another reason why the WTO has encouraged countries to replace quotas with tariffs.

Home Monopoly with quotas



Under a tariff, the monopolist produces at E, selling $Q^/_S$, charging $P^W + t$. Consumers demand $Q^/_D$, giving $\overline{Q}$ imports.

With a quota, the monopolist's demand shifts in by the size of the quota. It sets quantity where new $MR^/ = \Sigma MC$, at G and Q_q, with price from new demand, P_q. At P_q, demand is $Q^{//}_D$, giving imports of $\overline{Q}$, same as tariff.

Home Monopoly with quotas

- We choose a quota that will give us the same import as the tariff, $\overline{Q}$.
- The effective demand curve facing the Home monopolist under the quota is now the old demand curve, D, minus the quota, $\overline{Q}$.
- Because the monopolist know that imports cannot increase, a quota gives it the ability to adjust the price without the competition from abroad.
- The monopolist will choose its profit-maximizing price along D-$\overline{Q}$.

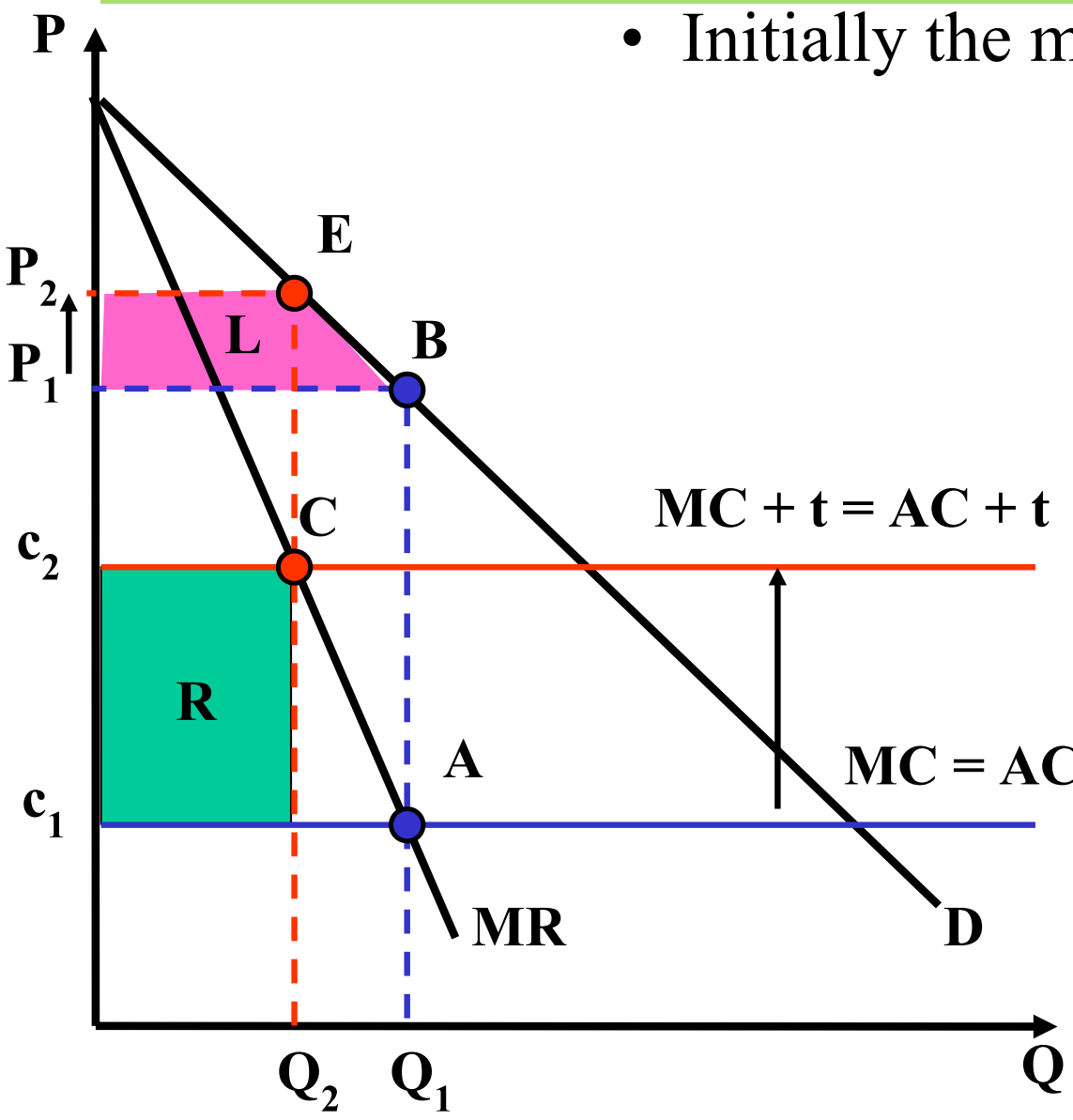
Home Monopoly with quotas

- With the new demand, we can derive a new marginal revenue, $MR^{/}$.
- $MR^{/}$ = MC at point G with a ouput Q_q and a price of P_q.
- Even though the quota allows the same amount of imports as a tariff, the price is higher: $P_q > P_W + t$ and the output is lower: $Q_q < Q^{/}_S$.
- In fact the output can be even lower than the autarky's.

Home Monopoly with quotas

- Since price rises more with a quota than a tariff, the loss in consumer surplus under a quota will be larger.
- The higher price benefits the monopolist. The quota rents are measured by the difference between P_q and P_W times the imports.
- The quota rents are higher than the tax revenue would be under a tariff.
- The quota rents may be wasted on rent-seeking activities.

Tariff to extract foreign monopoly profit



- Initially the monopoly firm sells Q_1 at P_1.
- With the tariff, MC rises to MC + t, the firm sells Q_2 at P_2.
- $\Delta CS = -L$
- $\Delta GR = R$
- Net = R - L > 0
- Profit is shifted to Home but the world welfare declines.

Strategic Trade Policy

- The Infant Industry Argument for protection: With economies of scale, some industry may need temporary protection to nurture it to be a mature one.
  - How to identify the right “infant”.
  - A production subsidy may be more efficient than a tariff.
  - What if the “infant” never wants to “grow up”

Strategic Trade Policy: Game theoretical approach

- Suppose Boeing and Airbus are deciding to launch a new type of airplane.

		Air Bus	
		Enter	**Not Enter**
Boeing	**Enter**	**-5 , -5**	**100 , 0**
	Not Enter	**0 , 95**	**0 , 0**

- Two Nash equilibria: "Not Enter","Enter" = (0,95) and "Enter","Not Enter" = (100,0)

Strategic Trade Policy: Game theoretical approach

- Suppose the Airbus's government pays a subsidy of $25 Billion if Airbus enters, the new payoff matrix is

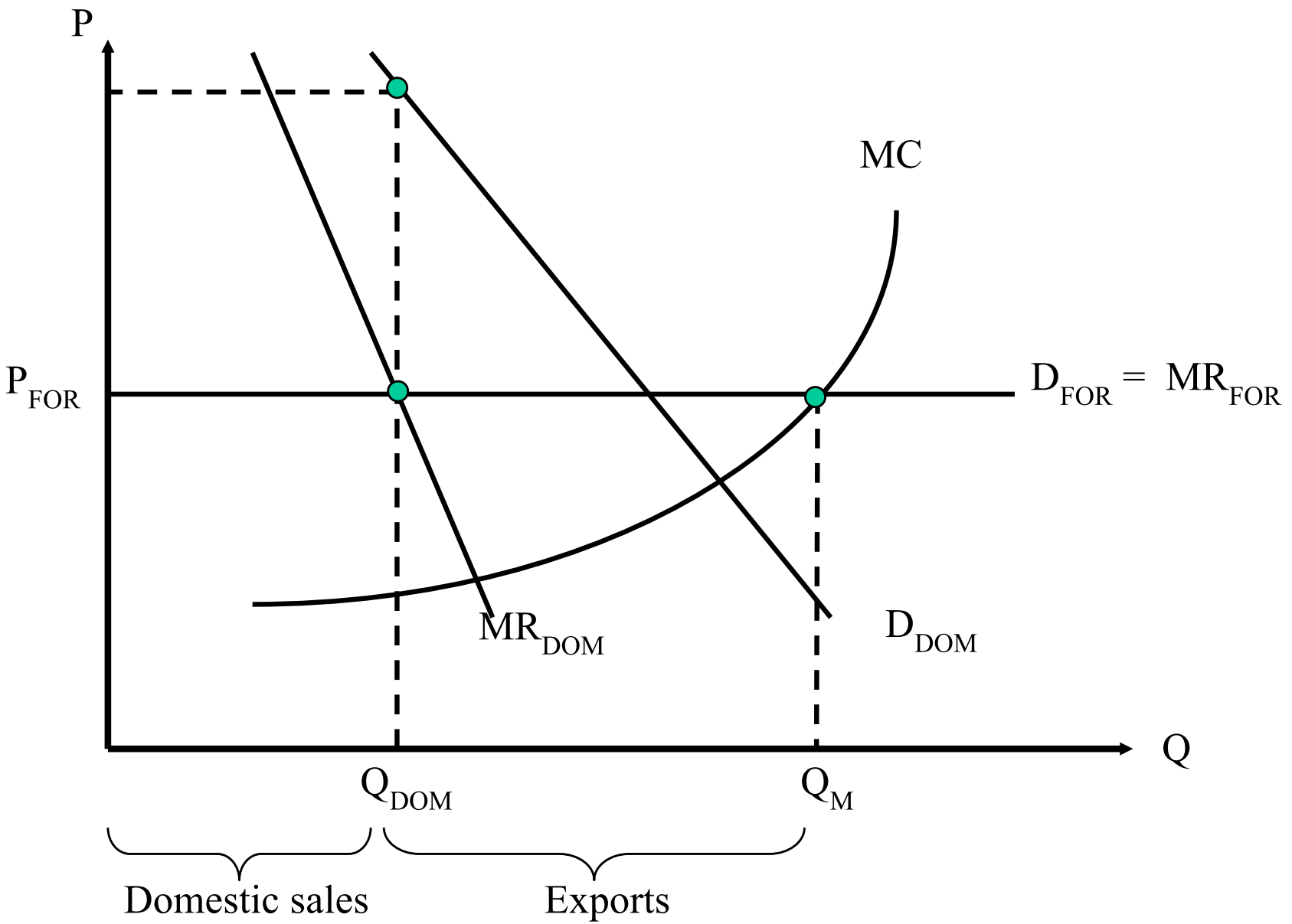
		Air Bus	
		Enter	**Not Enter**
Boeing	**Enter**	**-5 , 20**	**100 , 0**
	Not Enter	**0 , 120**	**0 , 0**

- There is only one Nash equilibrium: "Not Enter","Enter" = (0,120)

Dumping

- A monopolist can use price discrimination by selling the same product abroad cheaper than the one in its own market.
- Necessary conditions for price discrimination
  - have some market power
  - be able to identify the different consumers with different price elasticities and charge different prices
  - be able to prevent arbitrage
- Maximize profit when $MR_{DOM} = MR_{FOR} = MC$

Dumping


P
MC
P_{FOR}
$D_{FOR} = MR_{FOR}$
MR_{DOM}
D_{DOM}
Q
Q_{DOM}
Q_M
Domestic sales
Exports

Policy Response to Dumping

- An imported product is being dumped if its price is below the price that the exporter charges in its own local market.
- If the exporter's local price is not available, then dumping is determined by comparing the import price to:
  - A price charged for the product in a third market, or
  - The exporter's average costs of production

Policy Response to Dumping

- Anti-dumping Duty
  - The amount of the antidumping duty is calculated as the difference between the exporter's local price and the "dumped" price in the importing country.
  - The purpose of the duty is to raise the price of the dumped good and protect domestic producers.
  - The fact that the higher price also raises prices for domestic consumers and causes a deadweight loss for the importing country is not taken into account when deciding on whether or not to apply the tariff.

Policy Response to Dumping

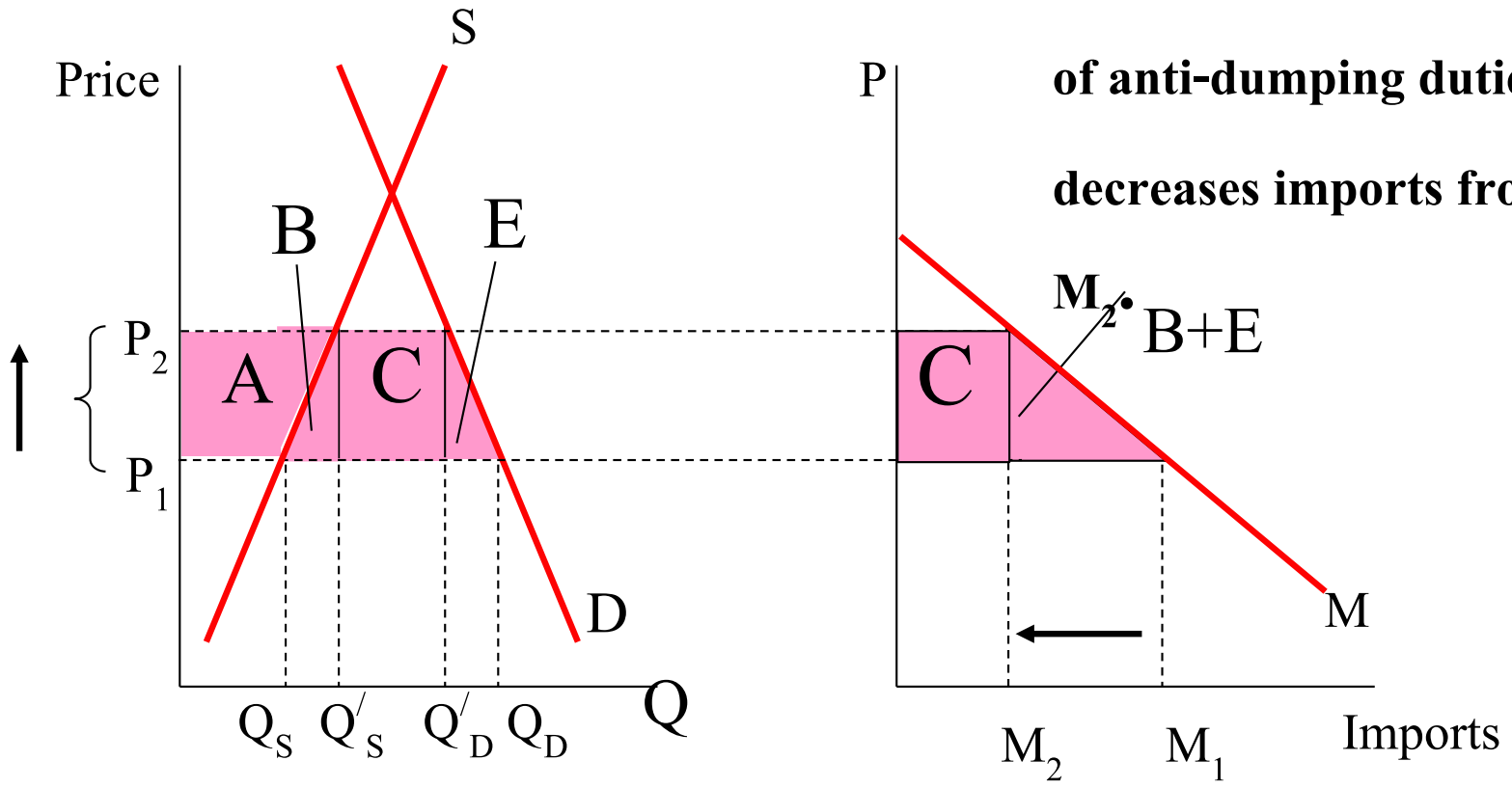
- Calculation of Antidumping Duty
  - To see why firms increase prices before an antidumping duty is applied we need to see how the duty is calculated.
  - The duty is based on the Foreign firm's local price.
  - For example, if the local price is $10 and the export price to Home is $6, the antidumping duty is $4—the difference in the local price and the export price.
  - This method creates an incentive for the Foreign firm to raise its export price even before the tariff is applied so the duty will be lower.

Policy Response to Dumping

- Calculation of Antidumping Duty
  - So using our same example, if they charge an export price of $8 instead of $6 but keep the local price at $10, the duty is now only $2.
  - A price of $10, would avoid the duty all together.
  - This increase in the import price results in a terms-of-trade loss for the Home country.

Policy Response to Dumping

Foreign exporters increase their prices to Home due to the *threat* of anti-dumping duties, which decreases imports from M_1 to M_2



(a) Home market

(b) Import market

Policy Response to Dumping

- Welfare changes: as price rises from P_1 to P_2

  $\Delta PS = A$

  $\Delta CS = - [A + B + C + E]$

- If no duty, then no revenue to the Home government.
- B + C + E is now the deadweight loss which is higher than the tariff.

Policy Response to Dumping

- The loss of C is the extra costs associated with the threat of an antidumping duty.
- The fact that Foreign firms will raise their prices to reduce the potential duty gives Home firms an incentive to charge Foreign firms with dumping, even if none is occurring.
- Just the threat of dumping is often enough for Foreign firms to raise prices and therefore reduce competition in the market for that good.
- These incentives lead to excessive filings of antidumping and countervailing duty cases.

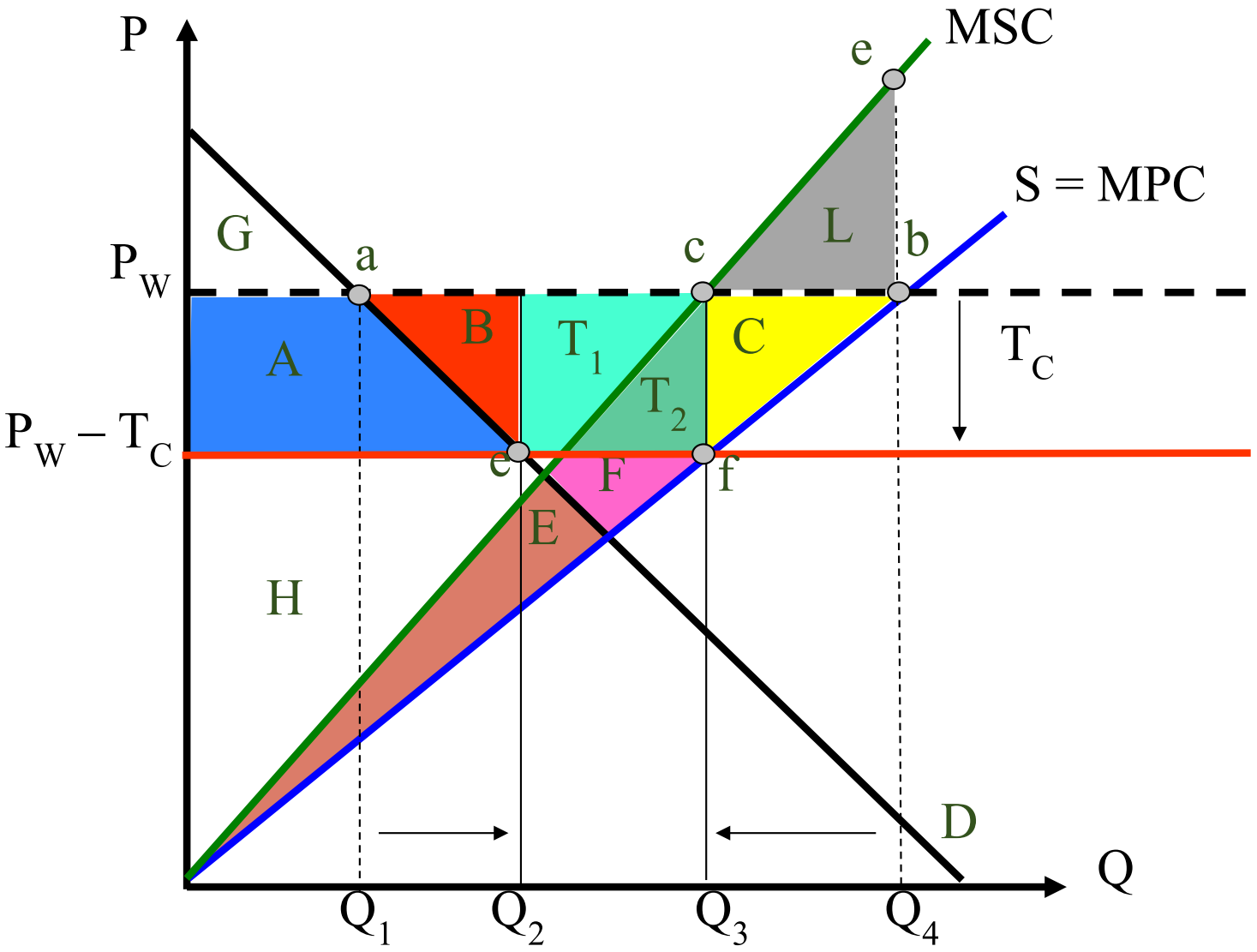
Trade and externalities

- Production of some goods generate externalities to the environment; e.g., waste water, greenhouse gases.
- Greenhouse gases (GHGs) is the main source of climate change or "global warming. Carbon dioxide (CO_2) contributes about 75% of the GHGs emitted by human.
- United Nation has urged developed countries (DCs), who historically emitted the majority of GHGs since the industrial revolution, to commit to reduce their emission while the developing countries may voluntarily contribute.

Trade and externalities

- The mitigation measures used by the DCs has increased their costs and lowered their competitiveness.
- To level the playing field, some politicians in DCs, such as the US and EU, proposed a trade restriction from countries that do not have comparable mitigation measures to protect their local industries.
- The measure is called Border Carbon Adjustment (BCA) which is virtually an import tariff based on the differences in CO_2 contents.

Trade and externalities



Inefficiency of a production externality

- Given a world price at P_W, the exporting country will produce up to Q_4, consume at Q_1, and export $Q_4 - Q_1$.
- The production generates CO_2 which cause the Marginal Social Cost curve, MSC, to be higher than the Marginal Private Cost curve, MPC.
- Welfare:

$$CS_0 = G,\ PS_0 = [A + B + T_1 + T_2 + C + H + E + F],$$

$$GR_0 = 0,\ EX_0 = -[E + F + T_2 + C + L]$$

EX_0 is the external cost to the society

Impacts of the Border Carbon Adjustment Tax

- A BCA tax at the rate of T_C by the importing country will cause the net export price to fall to $P_W - T_C$.
- Local consumption will increase to Q_2, production will drop to Q_3 and exports reduce to $Q_3 - Q_2$.
- Welfare changes:

$$\Delta CS_1 = A, \quad \Delta PS_1 = -[A + B + T_1 + T_2 + C],$$

$$\Delta GR_1 = 0, \quad \Delta EX_1 = [C + L]$$

$$\text{Net} = L - [B + T_1 + T_2]$$

Impacts of the Border Carbon Adjustment Tax

- The area L is the efficiency improvement of less emission resulting from use of the BCA.
- B is the consumption distortion as BCA encourages more local consumption which should have been exported.
- T_1 and T_2 are the transferred welfare from the exporting country to the importing country that use BCA tax.
- The net welfare change: $L - [B + T_1 + T_2]$ is unlikely to be positive.

Impact of a local Pigouvian tax

- An equivalent ad valorem Pigouvian tax is used instead by the exporting country which causes the production level to reduce to Q_3.
- Welfare changes:

$$\Delta CS_1 = 0, \quad \Delta PS_1 = -[A + B + T_1 + T_2 + C],$$

$$\Delta GR_1 = [A + B + T_1 + T_2], \quad \Delta EX_1 = [C + L]$$

$$\text{Net} = L$$

Impact of a local Pigouvian tax

- An equivalent ad valorem Pigouvian tax generates the same impacts on the producers and the reduction in the external costs, but has no impact on the consumers since they pay the same price.
- The local government receives tax revenue from the Pigouvian tax which then is distributed back to the society.
- The inefficient amount of emission is removed and the net welfare rises by the area L.
- Correcting the externalities at the source is more efficient than an indirect trade tax.