Neoclassical Trade Theory

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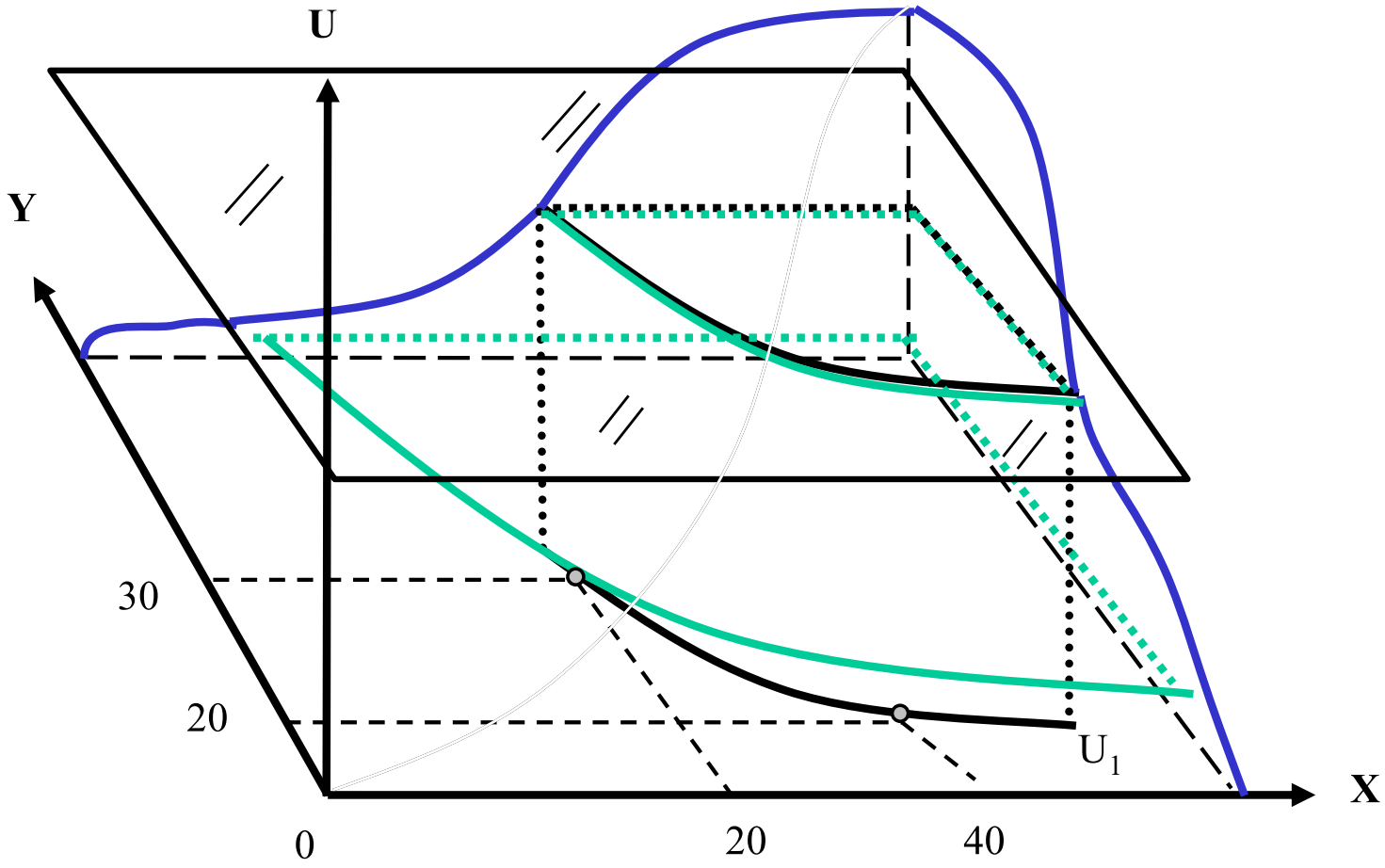
Outline

- Basic Tools
  - Consumer Behavior Theory
  - Production Theory
  - Edgeworth Box Diagram and PPC
- Gains from Trade in Neoclassical Theory
  - Autarky Equilibrium
  - Production and Consumption Gains from Trade
- Offer Curves and Terms of Trade

Consumer Behavior Theory

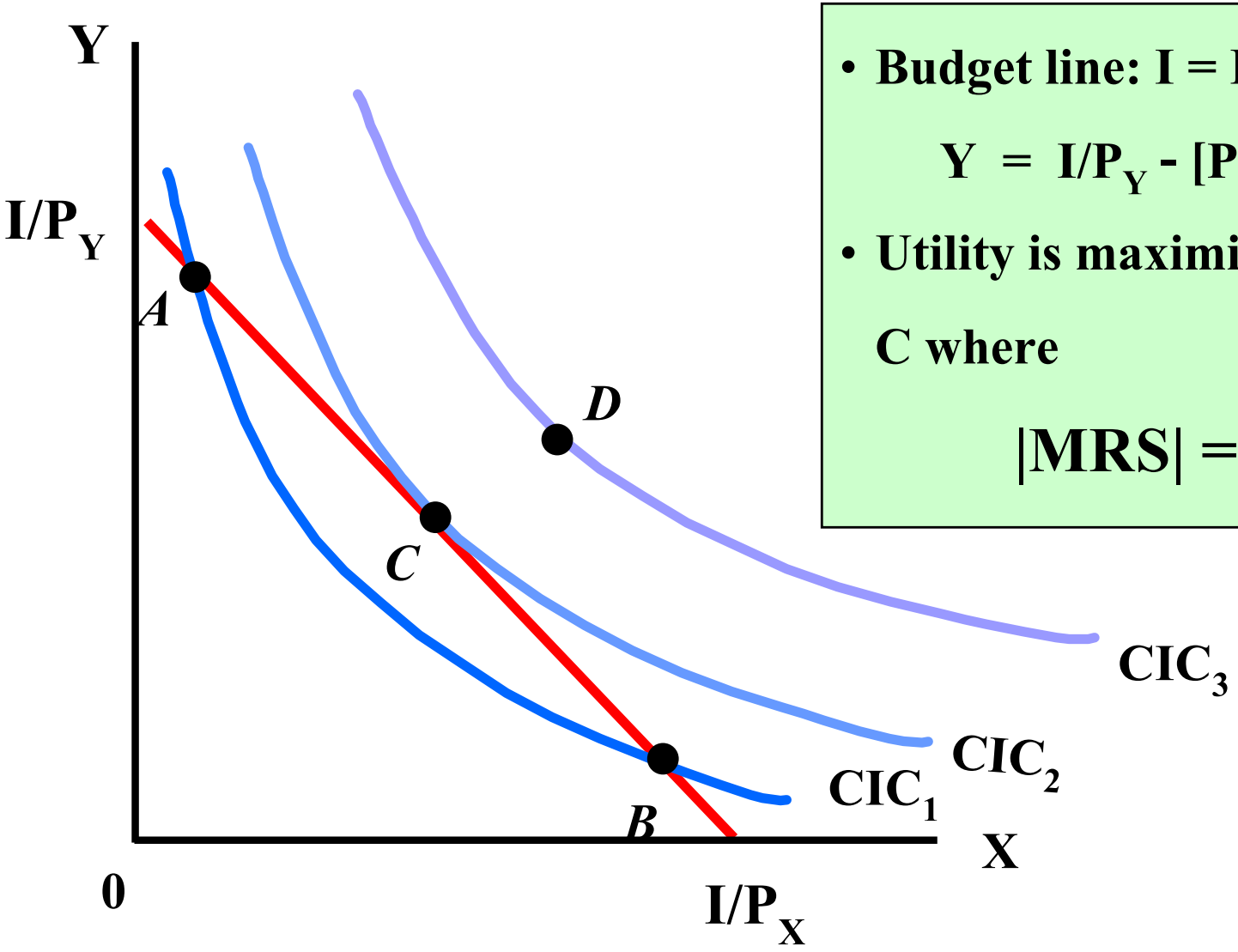
Utility function: $U = U(X,Y)$



Indifference Curves: Properties

- They slope downward to the right.
  - Goods are substitutable
  - If F rises, C must fall to maintain the same U1.
- Any basket lying northeast of an IC is preferred to any on the IC
- Convex to the origin
  - Variety is preferred to extreme
- Indifference curves can not cross
- Continuous: no gaps

Utility maximization



- **Budget line: $I = P_X X + P_Y Y$**

  $$Y = I/P_Y - [P_X/P_Y]X$$

- **Utility is maximize at point C where**

  $$|MRS| = P_X/P_Y$$

Aggregating Individual Preferences

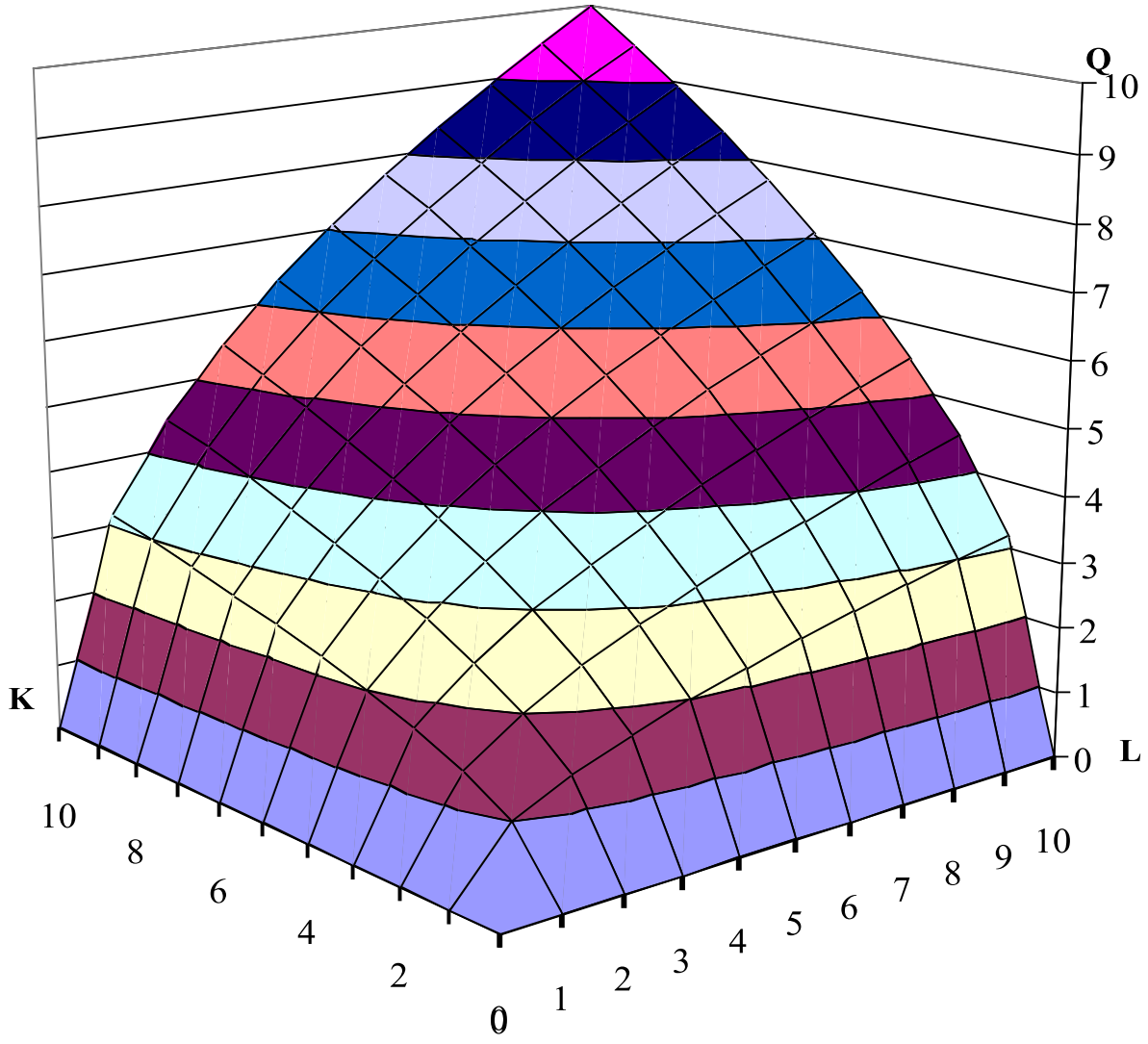
- In order to aggregate individual preferences into community preferences without any problems, we need to assume that preferences are identical and homothetic or the proportion of consumption bundle does not vary with income.
- Homothetic preferences imply that the summation of all individual demand is equal to the demand of a representative individual with the summation of all individual income or

$$\sum_{j}^{n} D_j(P_1, P_2, I_j) \quad = \quad D(P_1, P_2, I) \text{ where } I = \sum_{j}^{n} I_j$$

Assume: Income distribution does not change the total demand

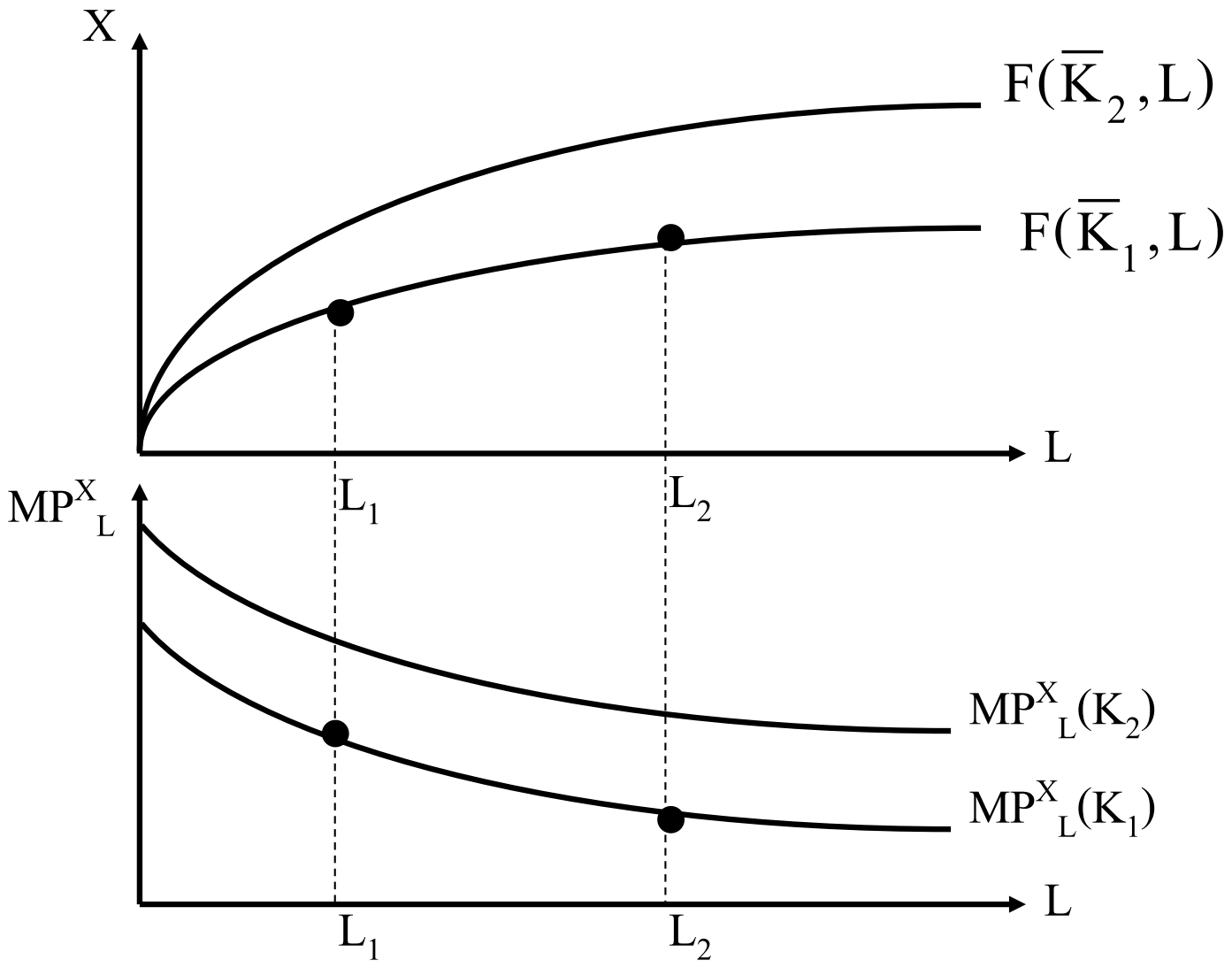
Production Theory

$$X = F(K_X, L_X), \qquad Y = G(K_Y, L_Y)$$



Production Theory

$$X = F(K_X, L_X),$$



Production Theory

- Production function

$$X = F(K_X, L_X), \qquad Y = G(K_Y, L_Y)$$

- Constant returns to scale or homogeneous of degree 1

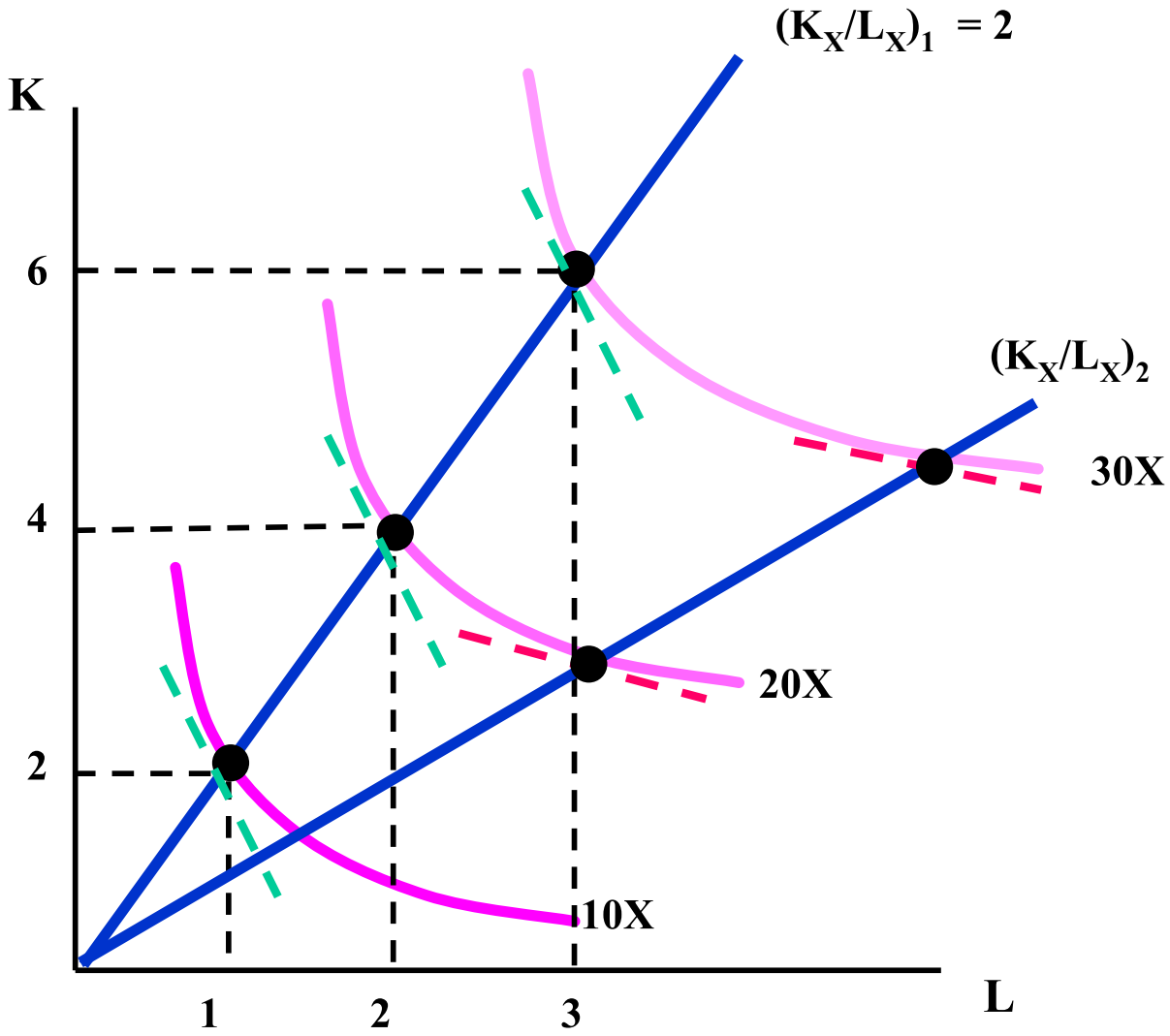
$$X = F(K_X, L_X)$$

$$Y = G(K_Y, L_Y)$$

the output grows at the same rate as the rate of both inputs

- Average products, marginal products, and MRTS are constant along the ray from the origin

Production Theory

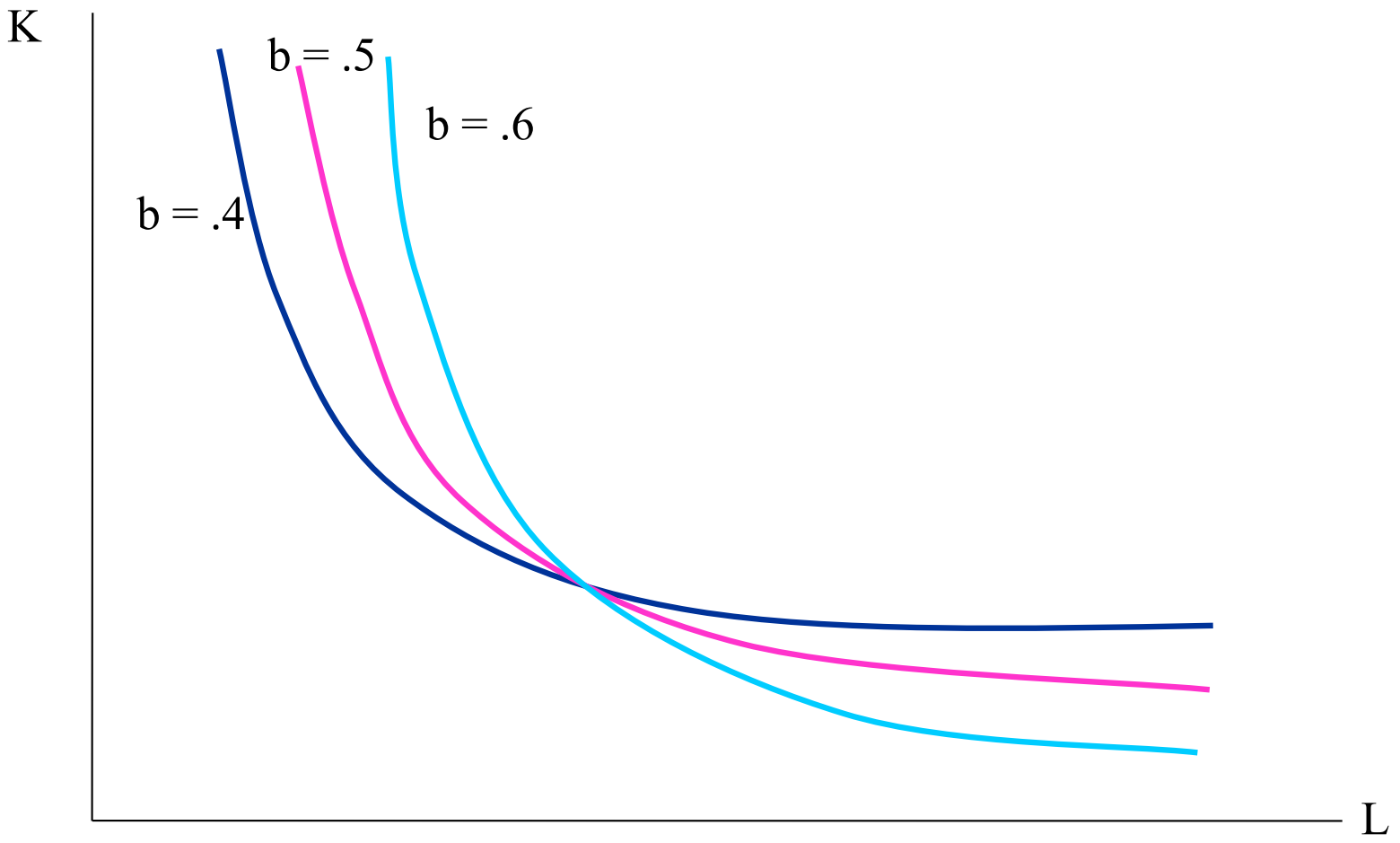


Production Theory

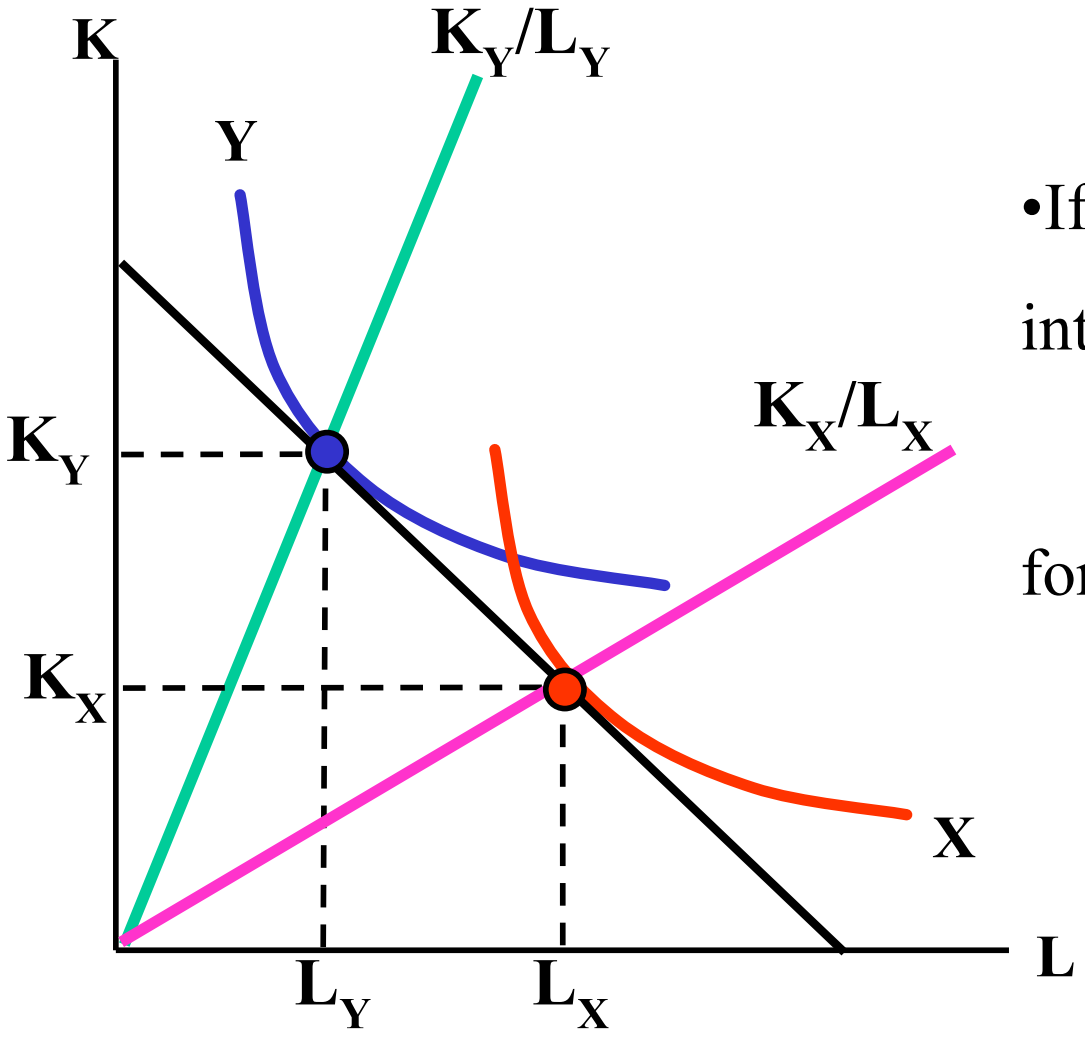
- From $X = L^{b}K^{(1-b)}$, $K^{(1-b)} = X/L^{b}$ --> $K = [X/L^{b}]^{(1/1-b)}$

X = 10

the value of b influences substitution between K and L



Production Theory



- Least cost combination requires

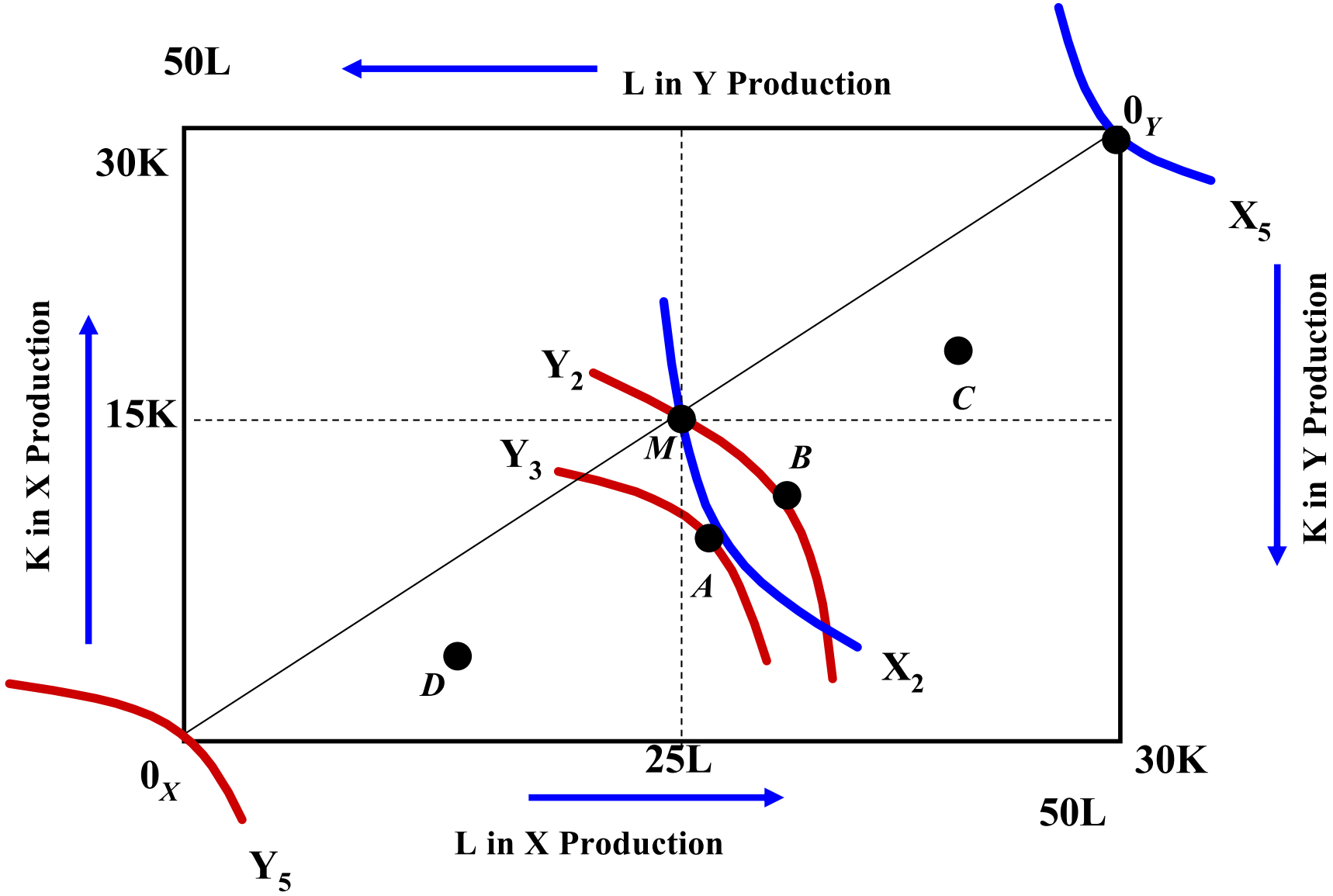
$$MRTS^X = w/r = MRTS^Y$$

- If Y production is capital intensive relative to X,

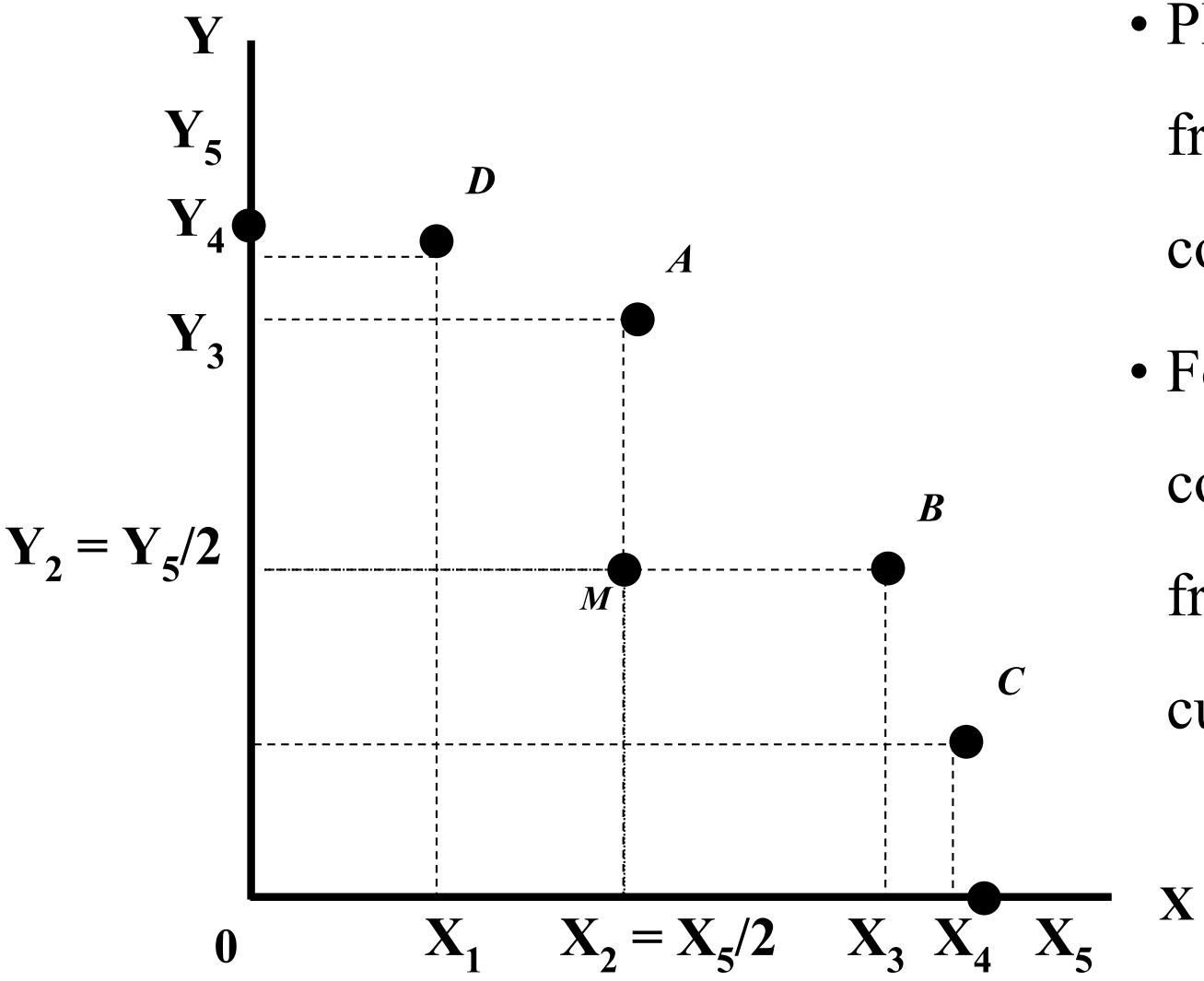
$$K_Y/L_Y > K_X/L_X$$

for any w/r.

Edgeworth Box Diagram



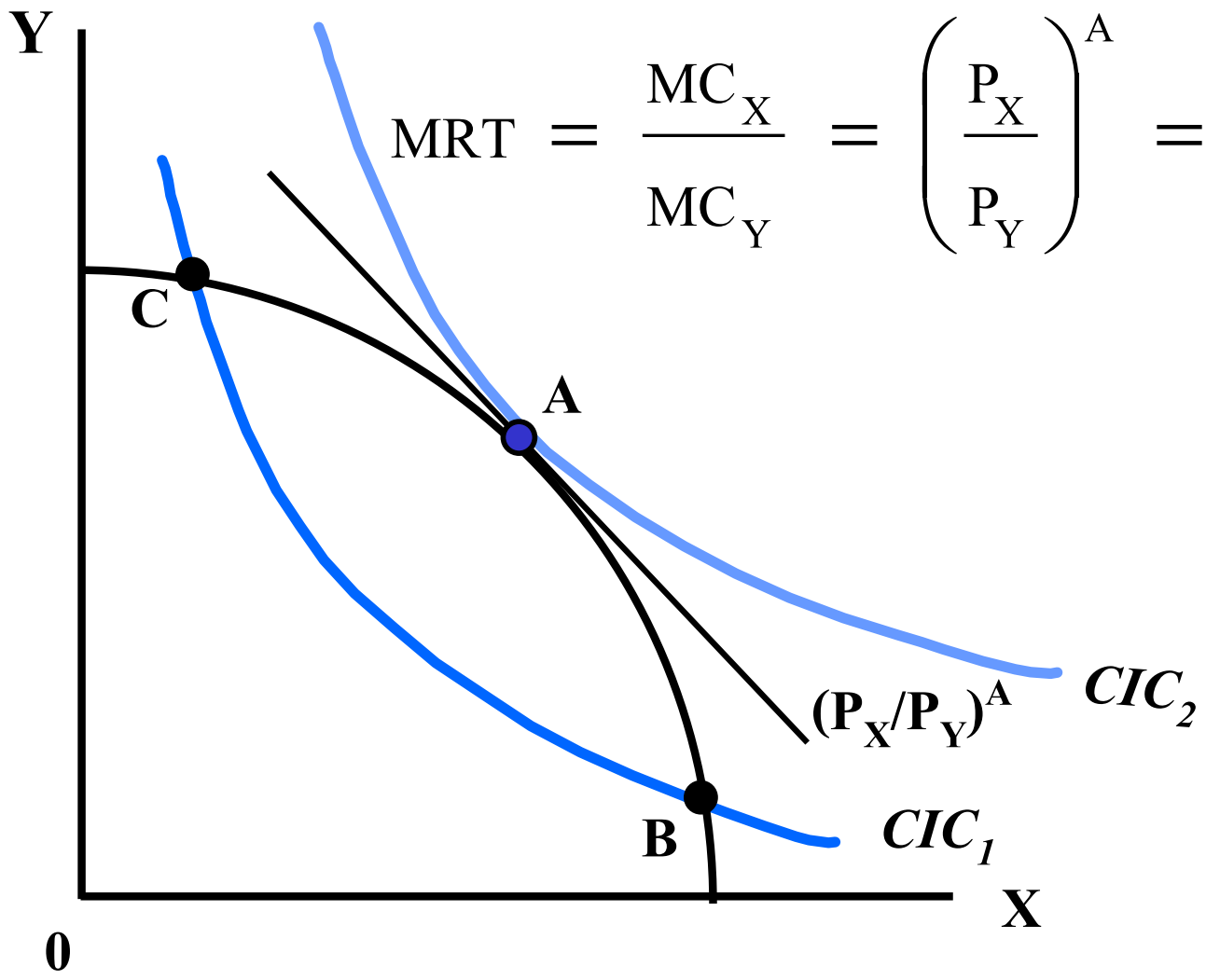
Production Possibility Curve



- PPC can be constructed from the production contract curve.
- For instance, point A comes from X_2 and Y_3 from on the contract curve.

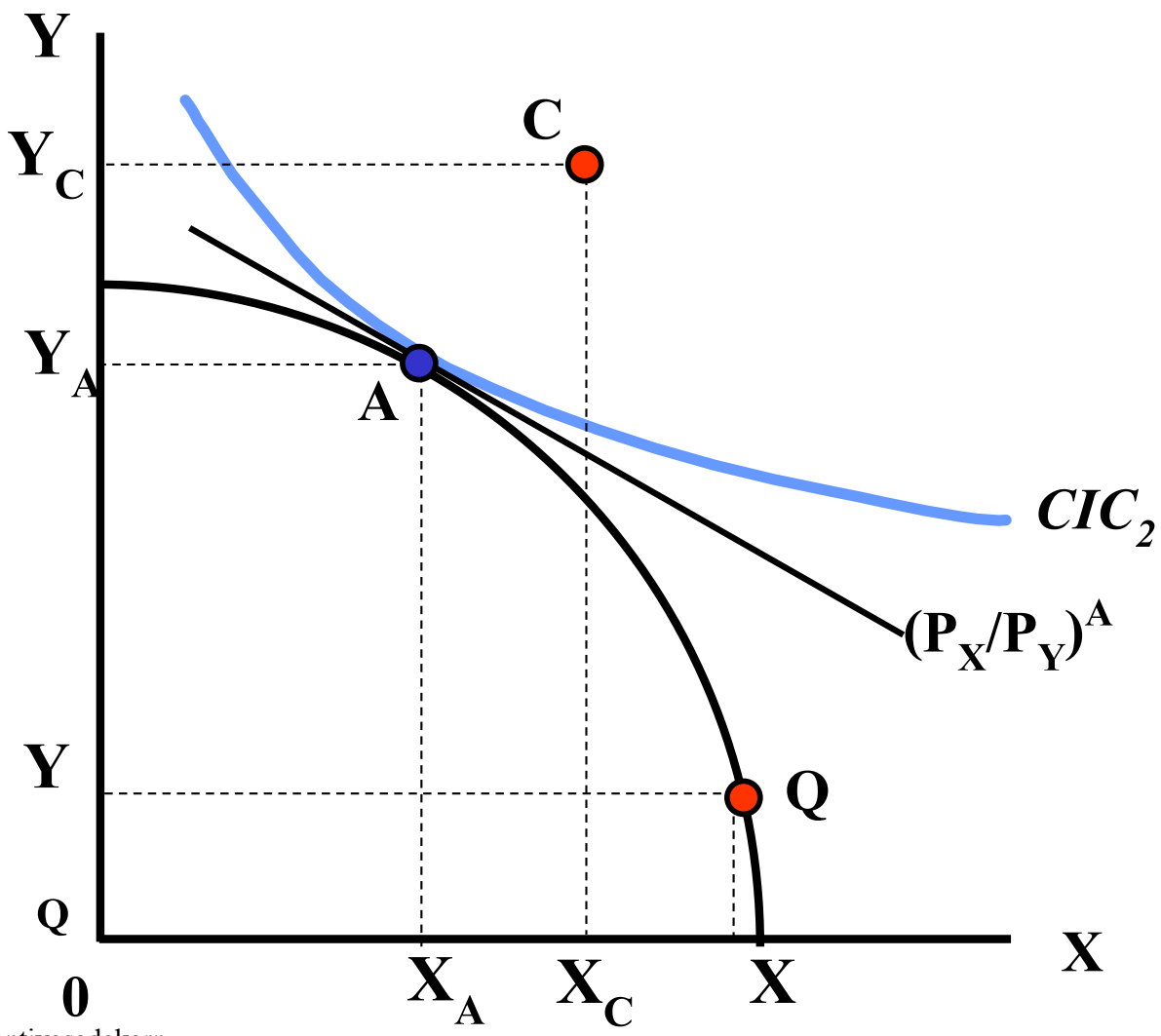
Autarky equilibrium

$$MRT = \frac{MC_X}{MC_Y} = \left(\frac{P_X}{P_Y}\right)^A = \frac{MU_X}{MU_Y} = MRS$$



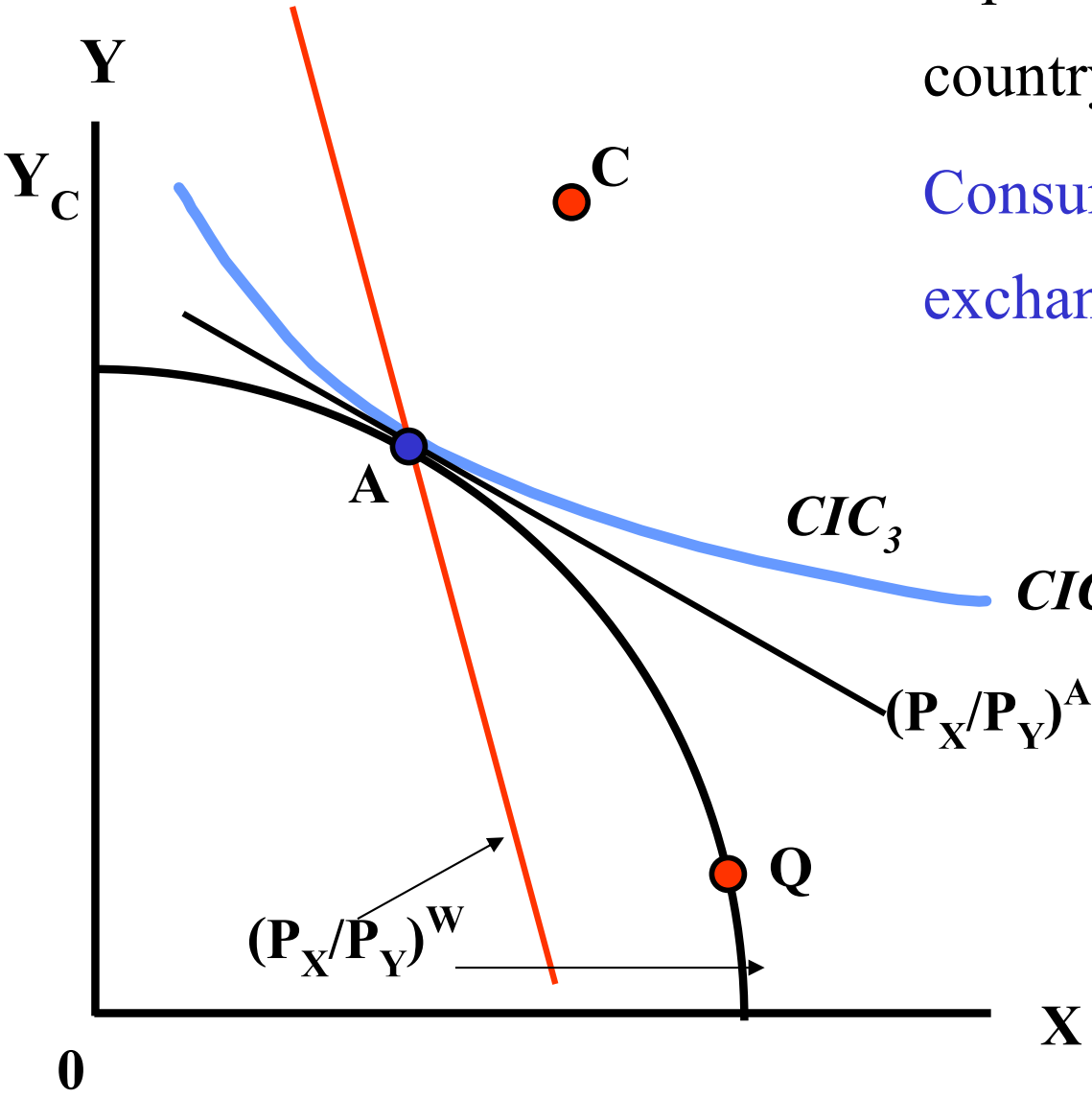
International equilibrium

- Suppose the world relative price of X is higher.



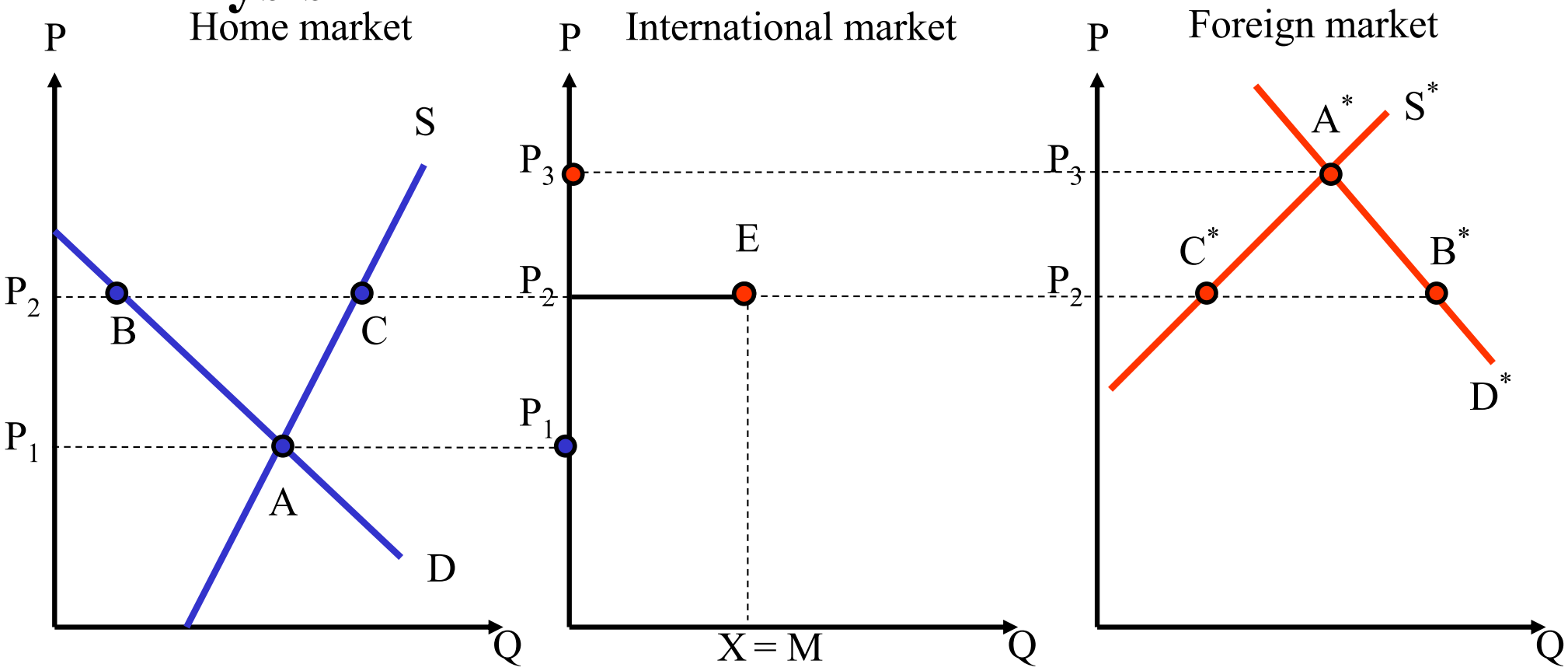
- Production moves to point Q.
- Consumption moves to point C.
- Exports X = $X_Q - X_C$.
- Imports Y = $Y_C - Y_Q$.

Gains from trade



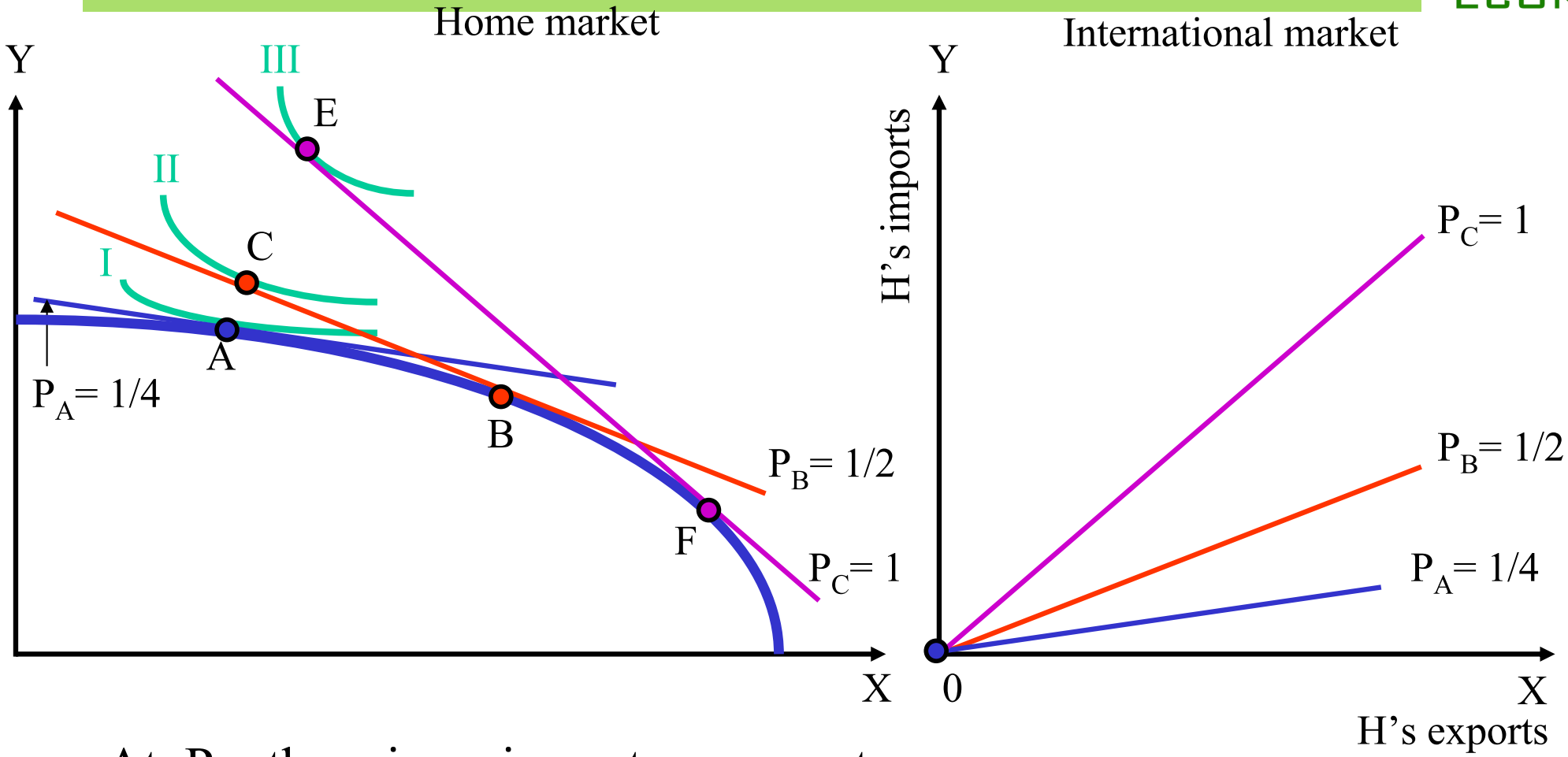
- If production remains at A but the country trade at world price. --> Consumption gain or gains from exchange: movement from A to C/.
- If production can change to Q --> Production gain or gains from specialization: movement from C/ to C.
- Total gains from trade: movement from A to C.

Equilibrium Price: Partial equilibrium analysis



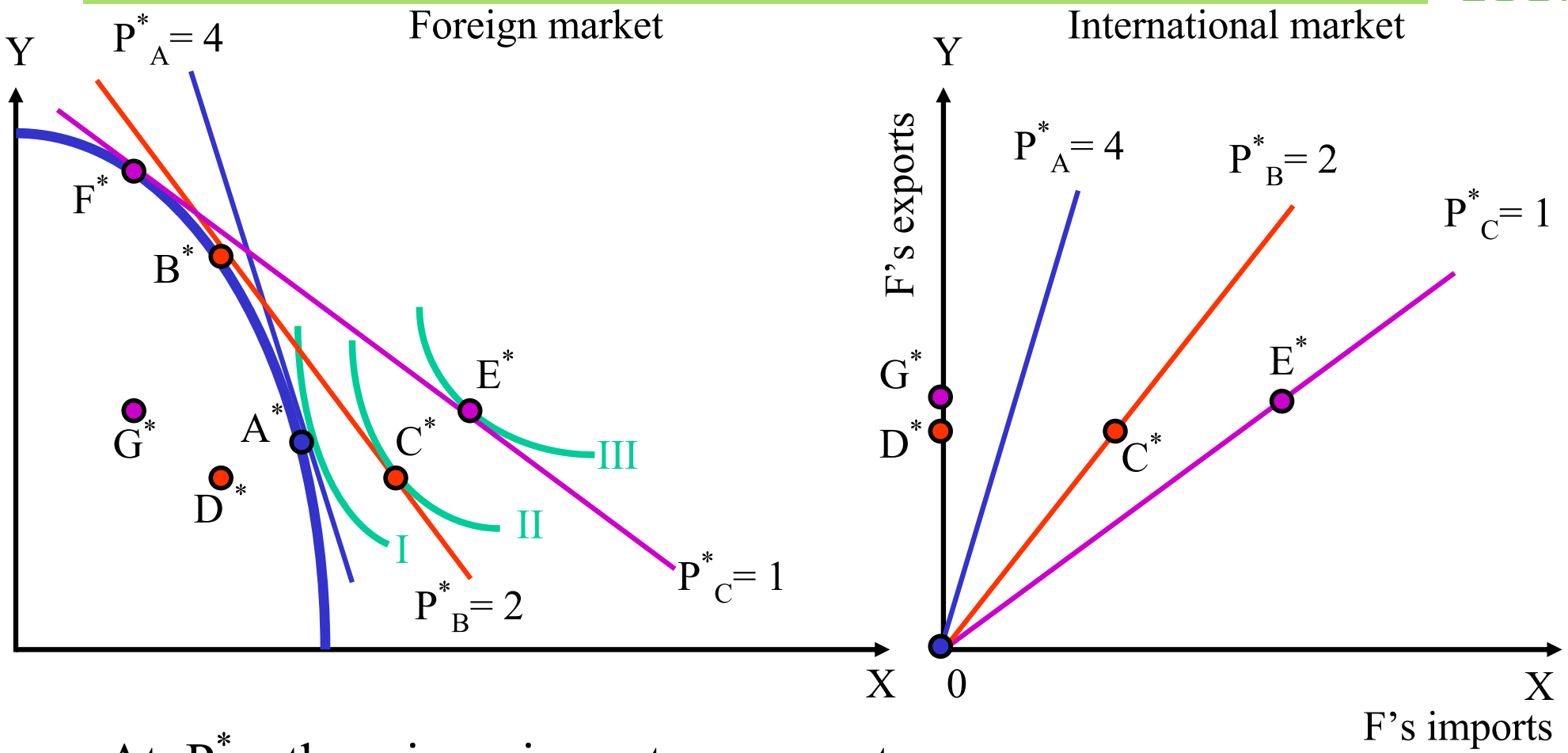
- Home's export supply curve, S_E, comes from its excess supply.
- Foreign's import demand curve, D^*_M, comes from its excess demand.
- International equilibrium price occurs where $S_E = D^*_M$ at point E.

Equilibrium relative price: Offer curves



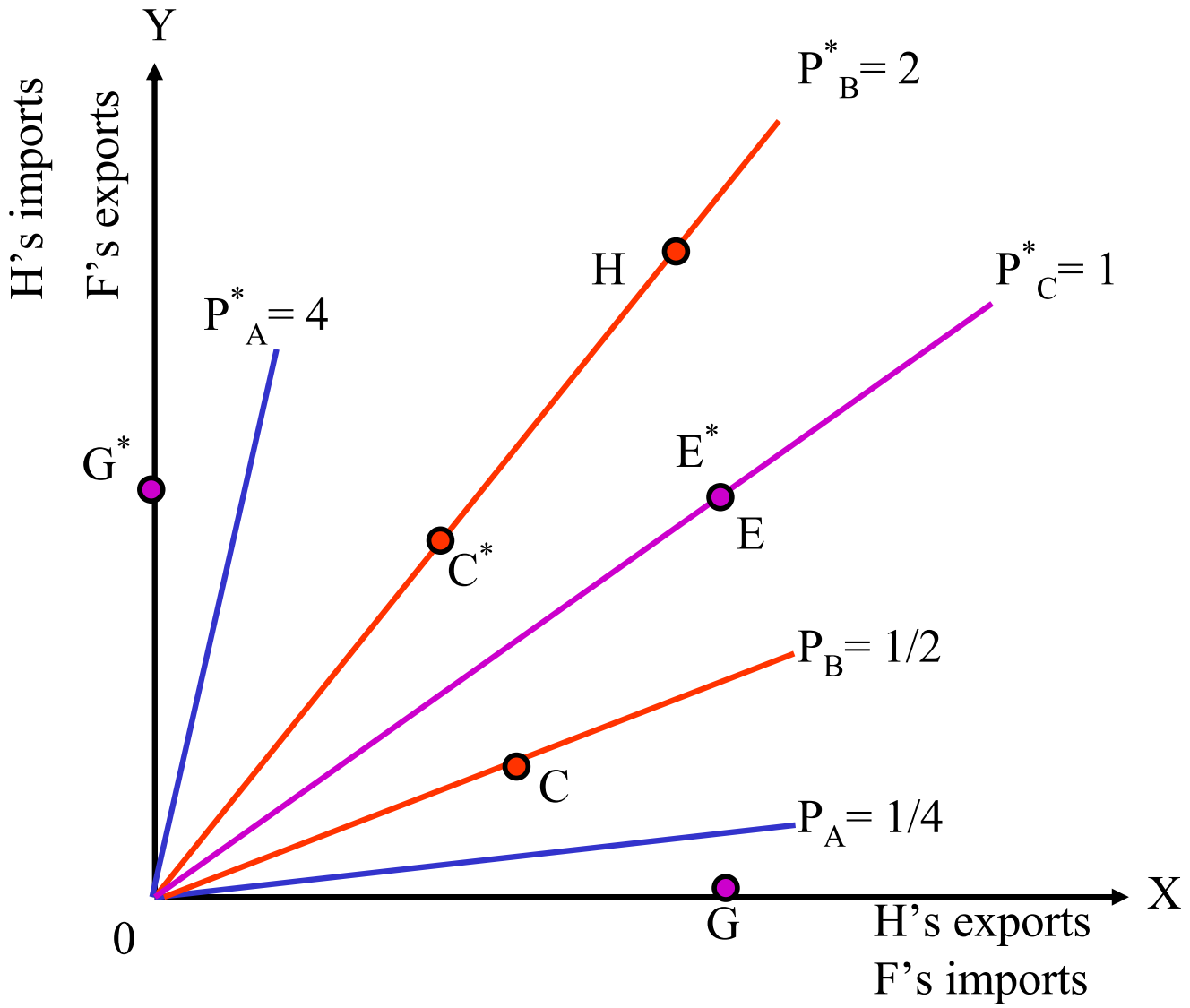
- At P_A, there is no imports or exports.
- At P_B, H imports Y = $\overline{CD}$ exports X = $\overline{DB}$.
- At P_C, H imports Y = $\overline{EG}$ exports X = $\overline{FG}$.

Equilibrium relative price: Offer curves



- At P^*_A, there is no imports or exports.
- At P^*_B, F imports $X = \overline{C^*D^*}$ exports $Y = \overline{B^*D^*}$.
- At P^*_C, F imports $X = \overline{E^*G^*}$ exports $Y = \overline{F^*G^*}$.

Equilibrium relative price: Offer curves



- The equilibrium relative price is at the intersection of offer curves.