

Neoclassical Trade Theory

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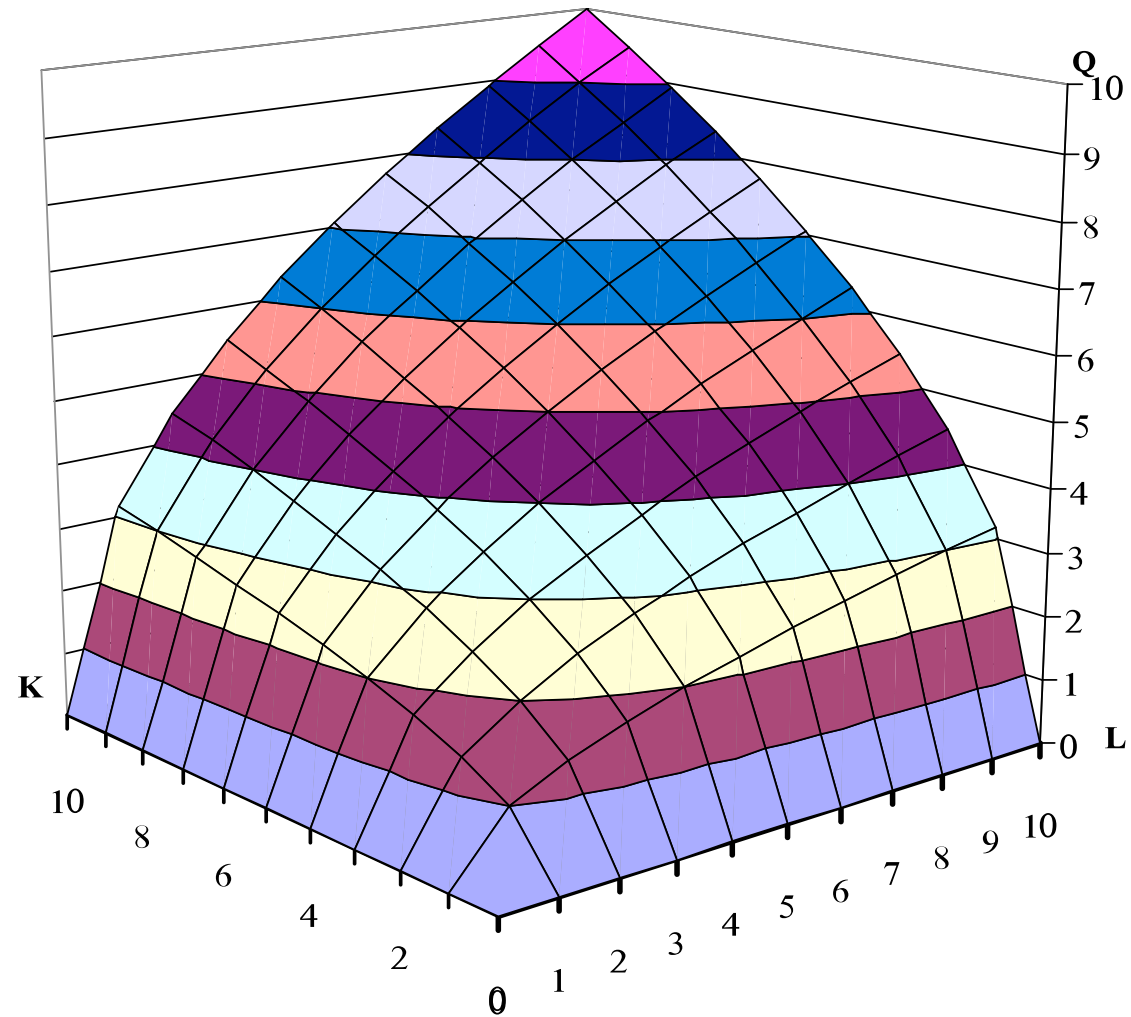
Outline

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

Production Theory

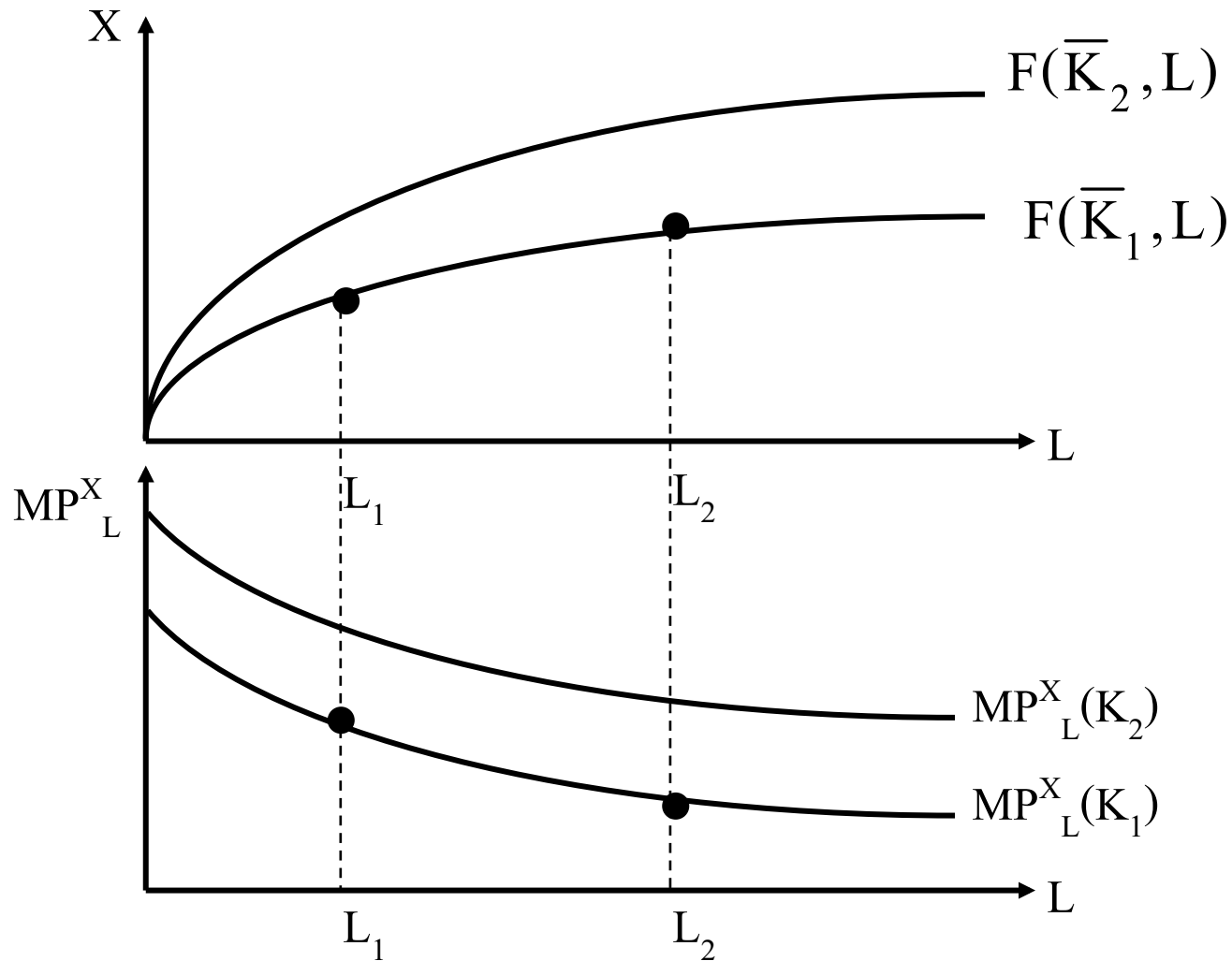
$$X = F(K_X, L_X),$$

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



Production Theory

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



Production Theory

- Production function

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

- Constant returns to scale or homogeneous of degree 1

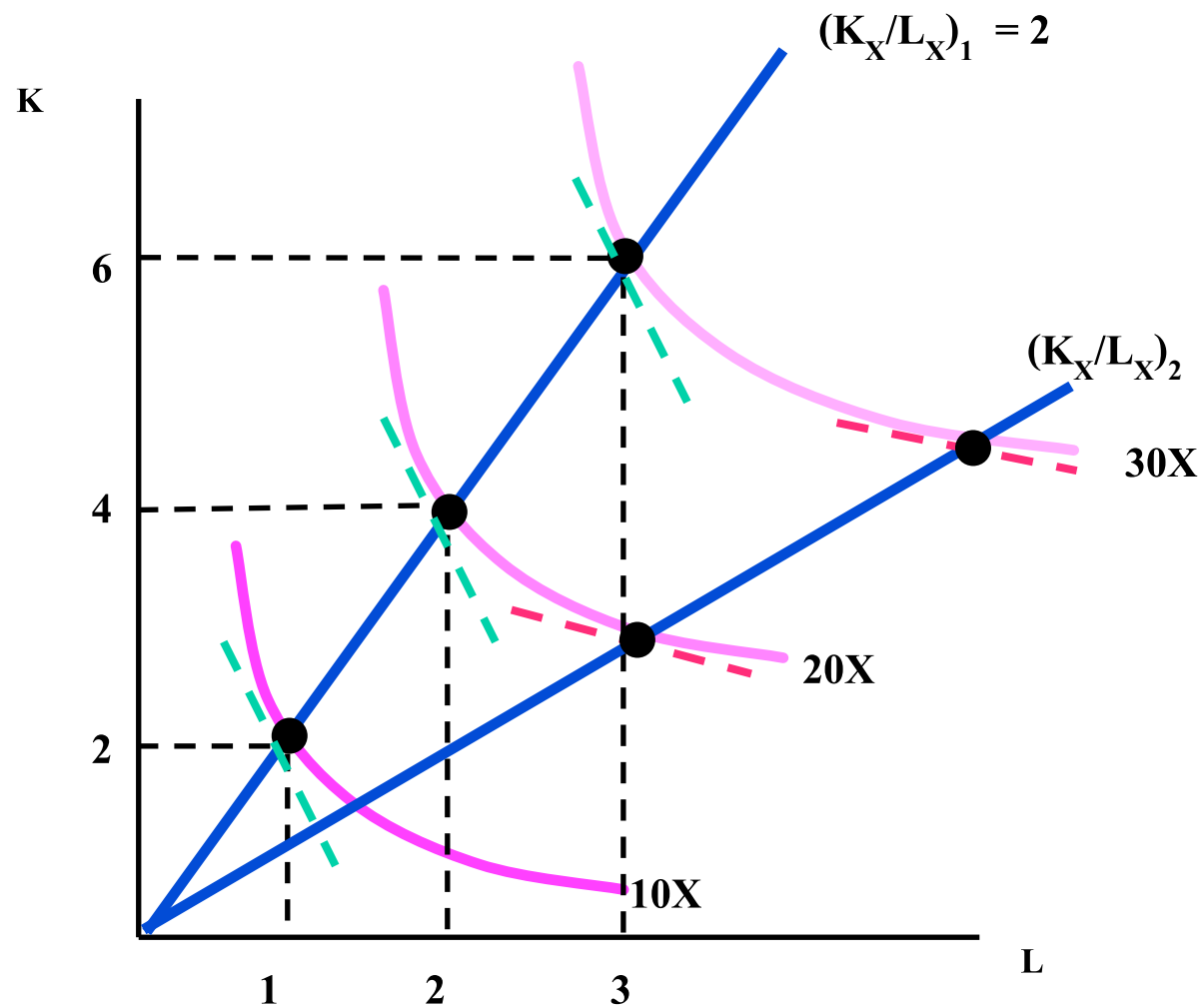
$${}_1X = F({}_1K_X, {}_1L_X)$$

$${}_1Y = G({}_1K_Y, {}_1L_Y)$$

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

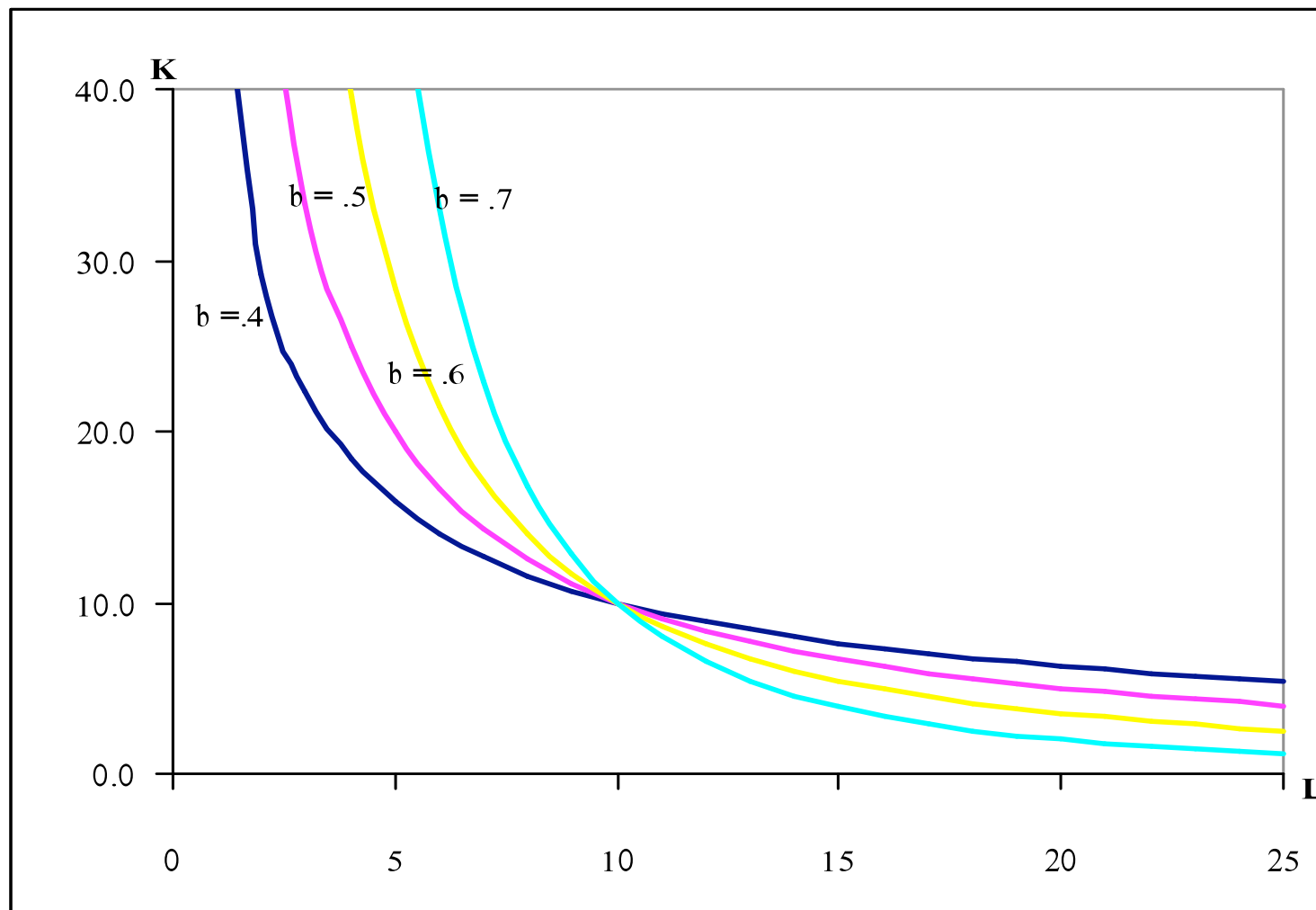


Production Theory

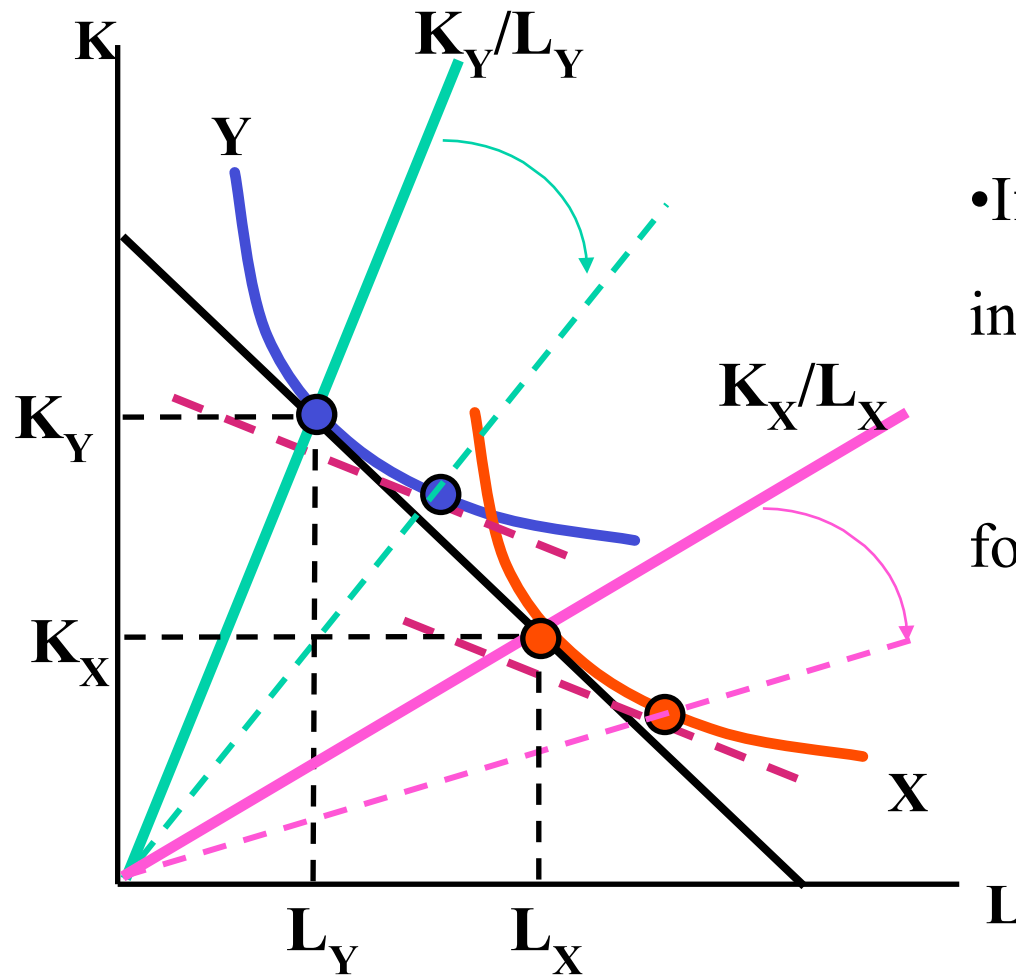
- From $X = L^b K^{(1-b)}$, $K^{(1-b)} = X/L^b \rightarrow K = [X/L^b]^{(1/(1-b))}$

$X = 10$

the value of b influences substitution between K and L



Production Theory



- Least cost combination requires

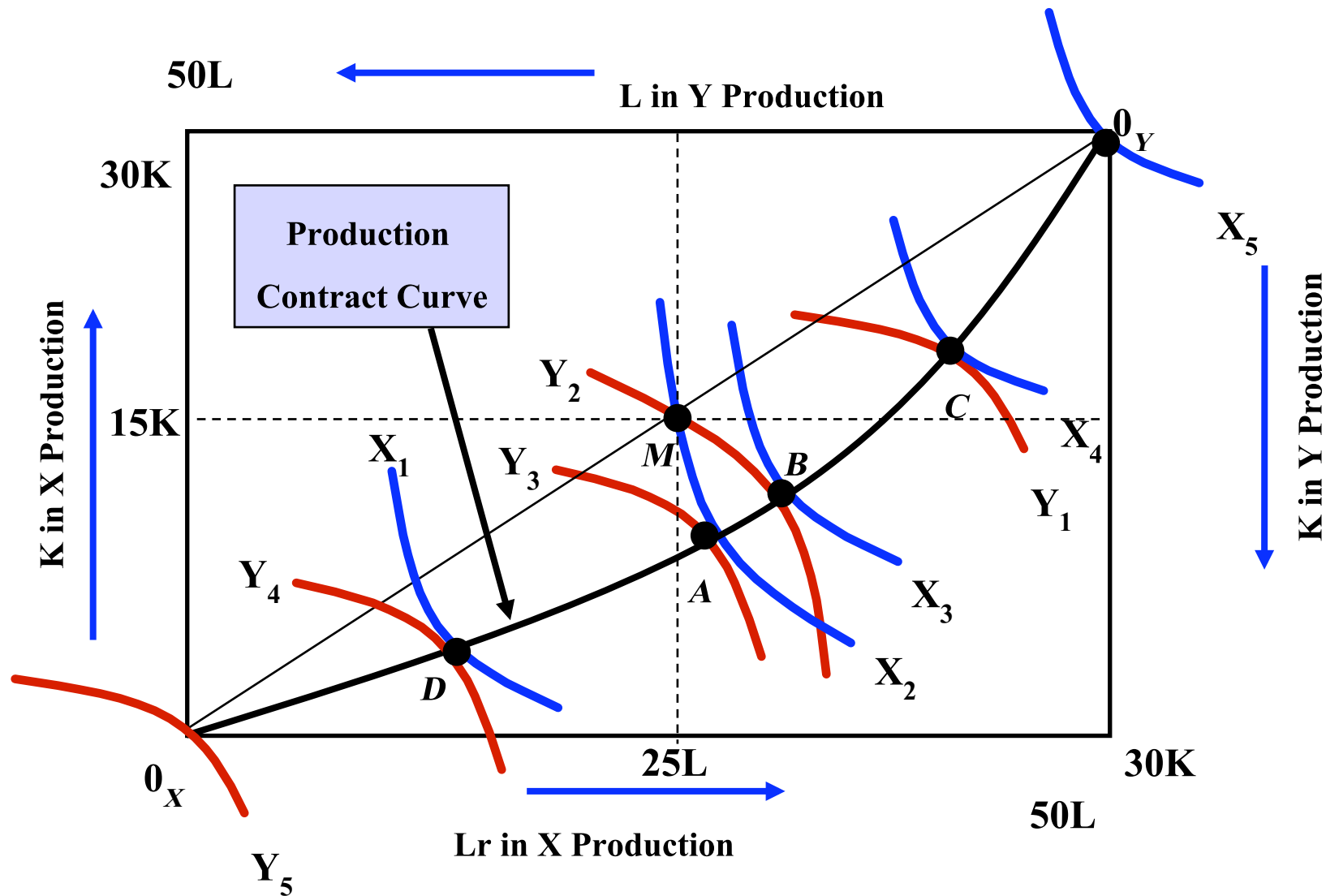
$$MRTS^X = w/r = MRTS^Y$$

- If Y production is capital intensive relative to X,

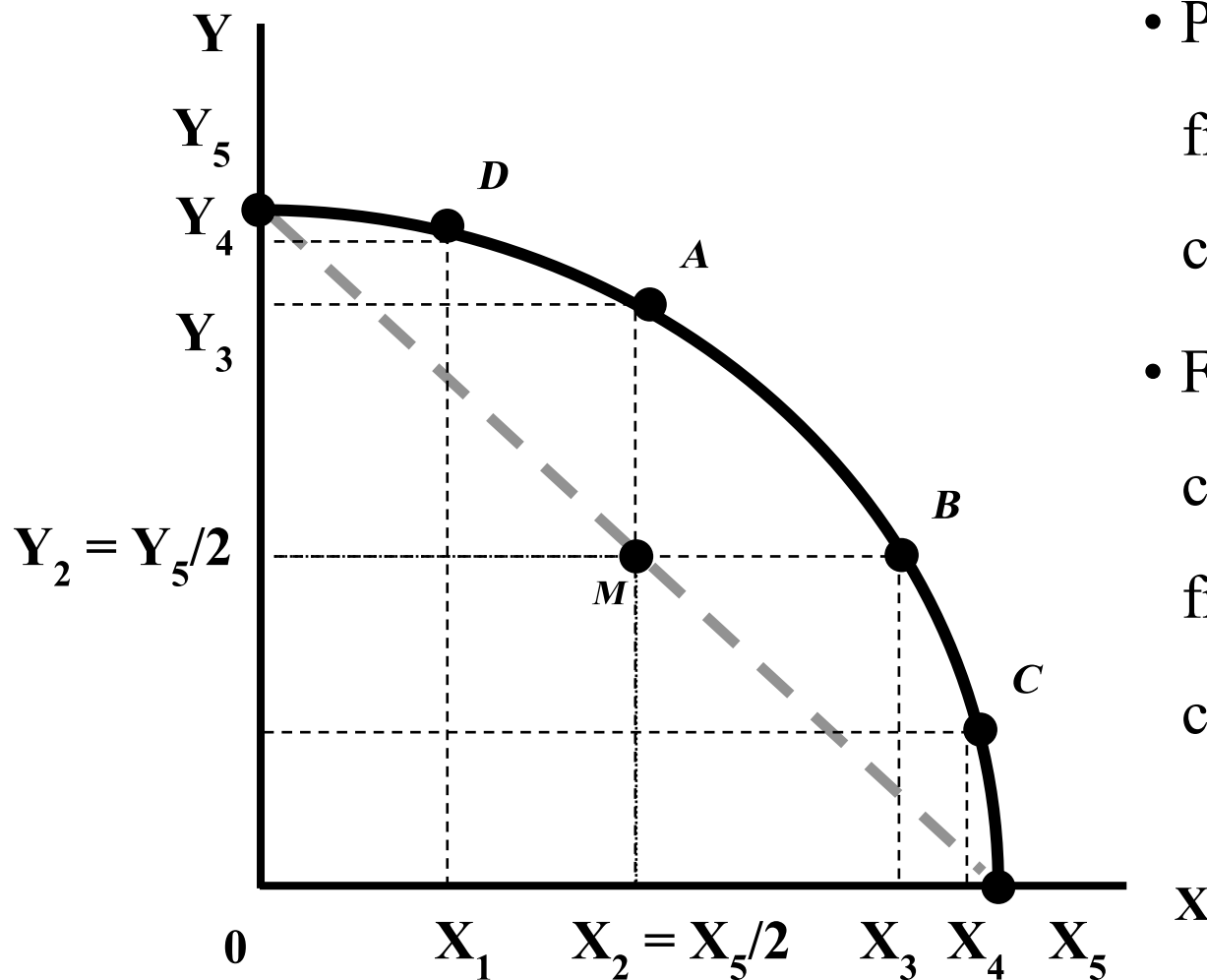
$$K_Y/L_Y > K_X/L_X$$

for any w/r .

Edgeworth Box Diagram



Production Possibility Curve

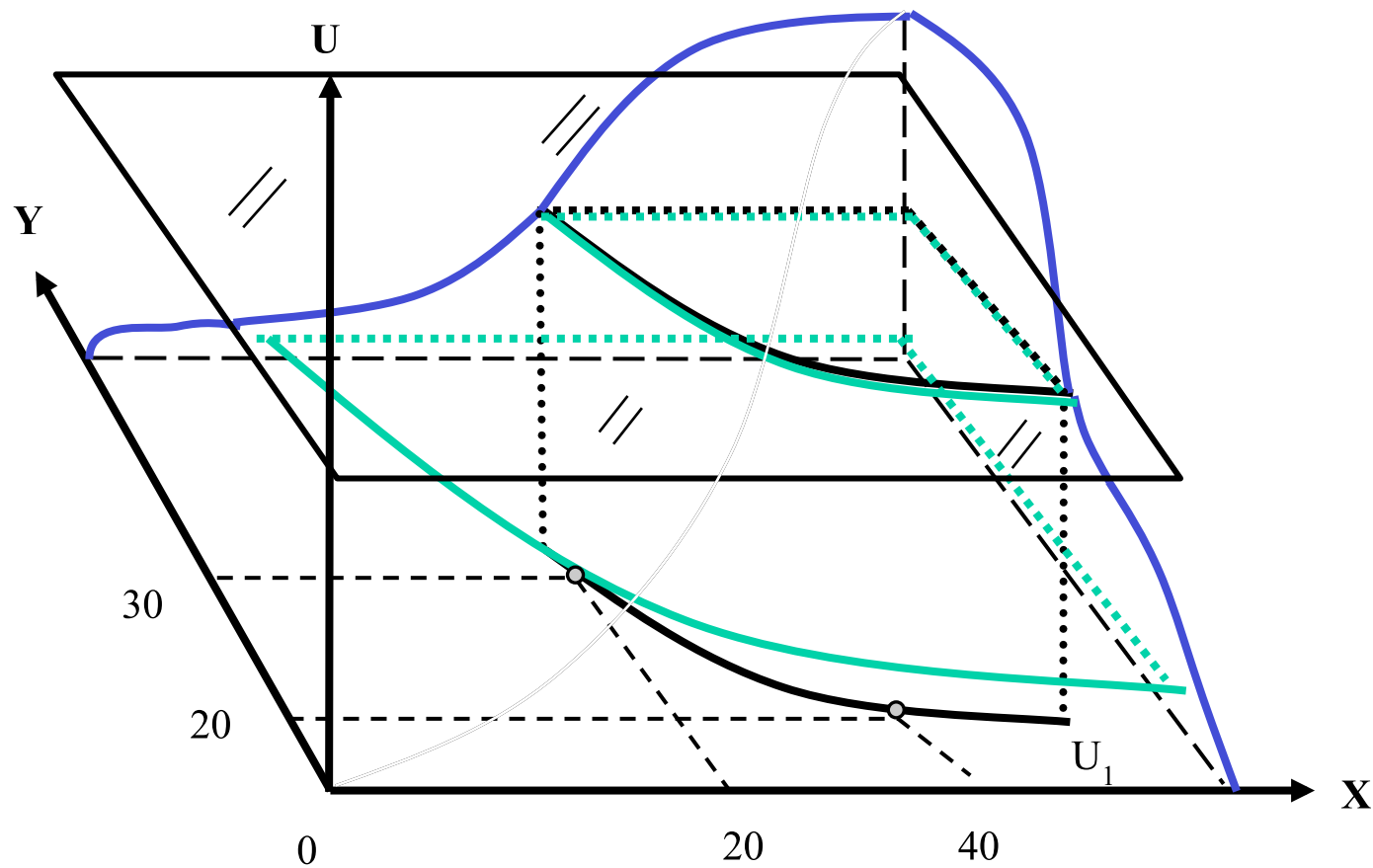


- PPC can be constructed from the production contract curve.
- For instance, point A comes from X_2 and Y_3 from on the contract curve.



Consumer Behavior Theory

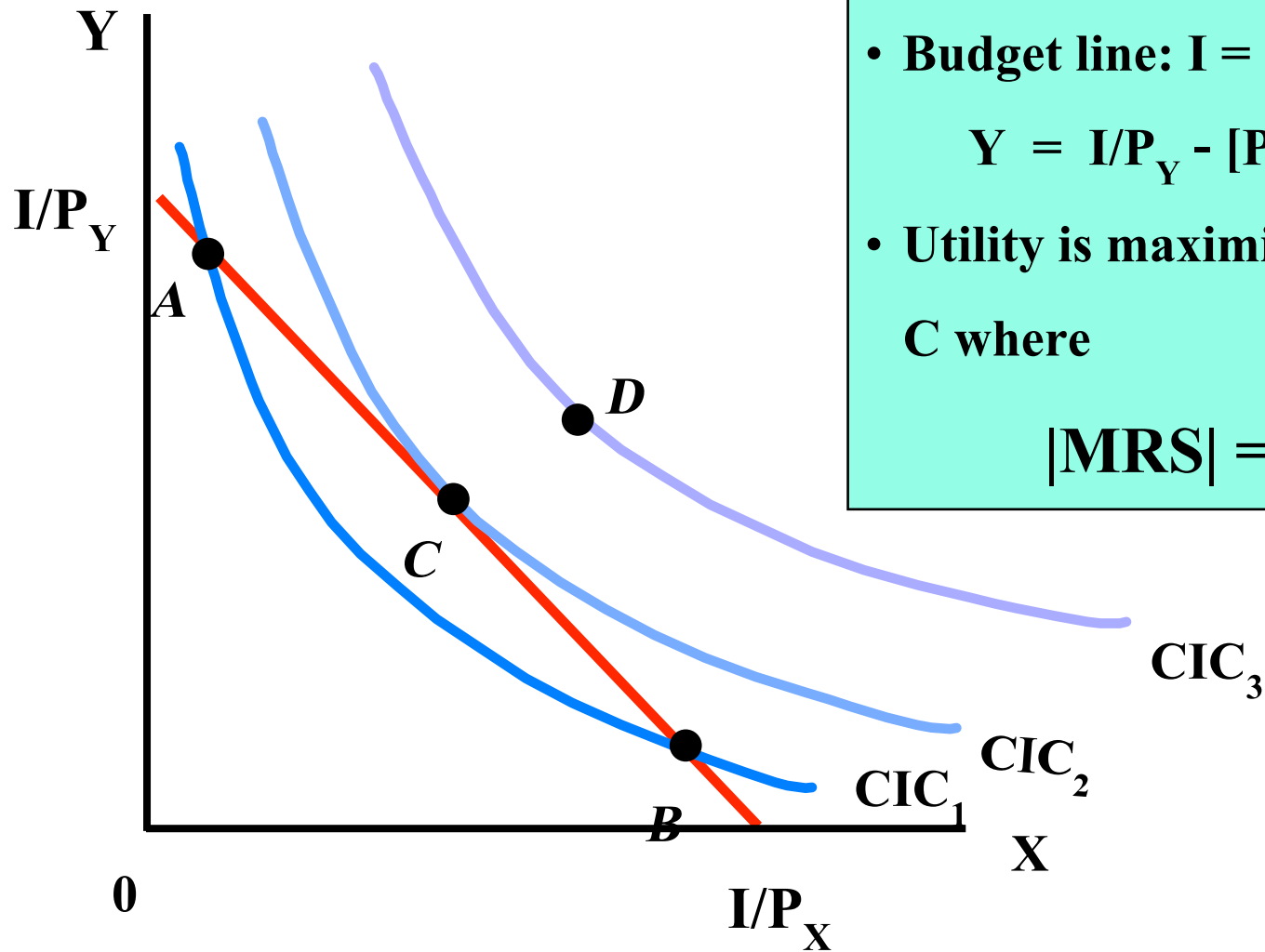
Utility function: $U = U(X, Y)$



Indifference Curves: Properties

- **They slope downward to the right.**
 - Goods are substitutable
 - If F rises, C must fall to maintain the same U_1 .
- **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

$$|MRS| = P_X/P_Y$$

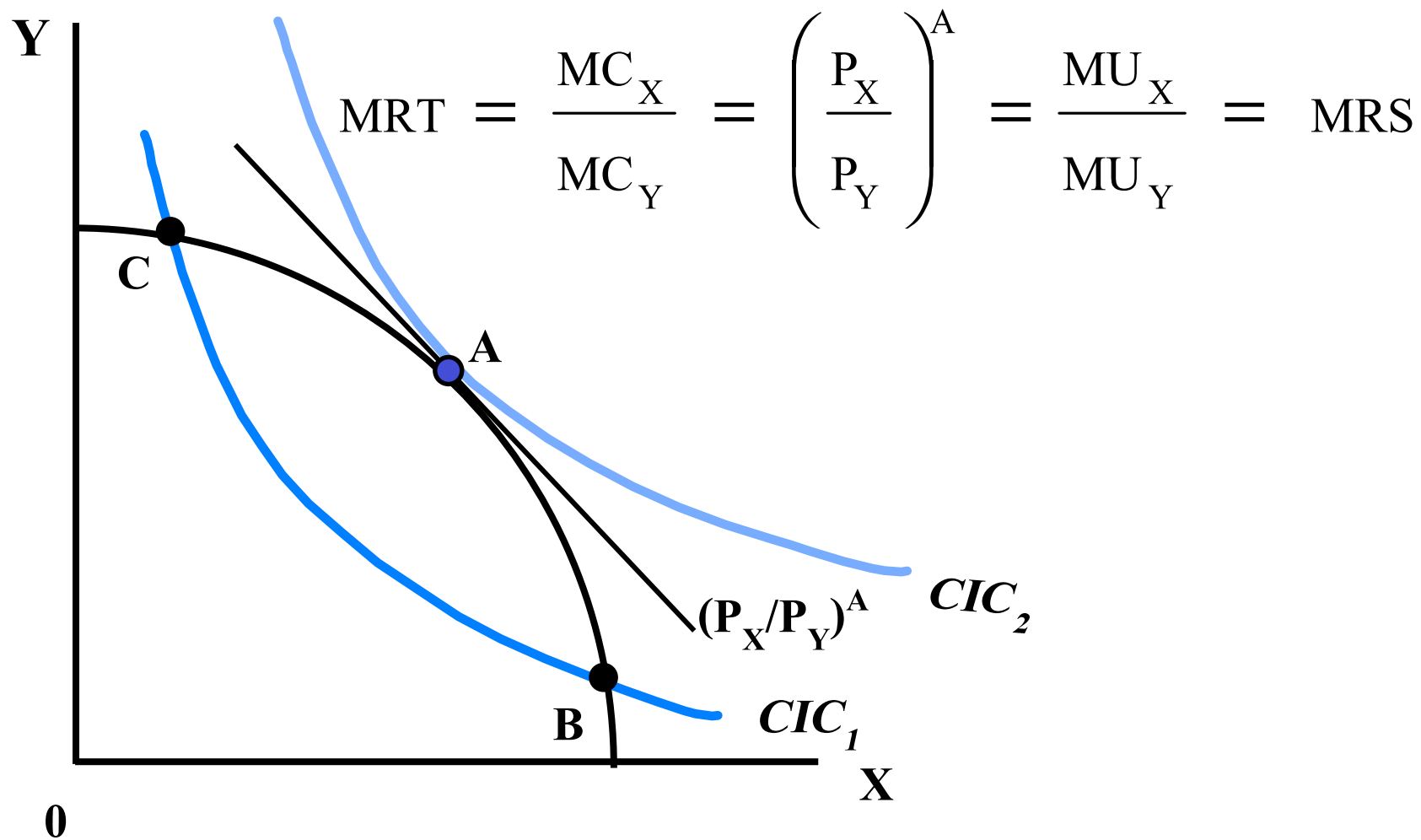
Aggregating Individual Preferences

- In order to aggregate individual preferences into community preferences without any problems, we need to assume that preferences are **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

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

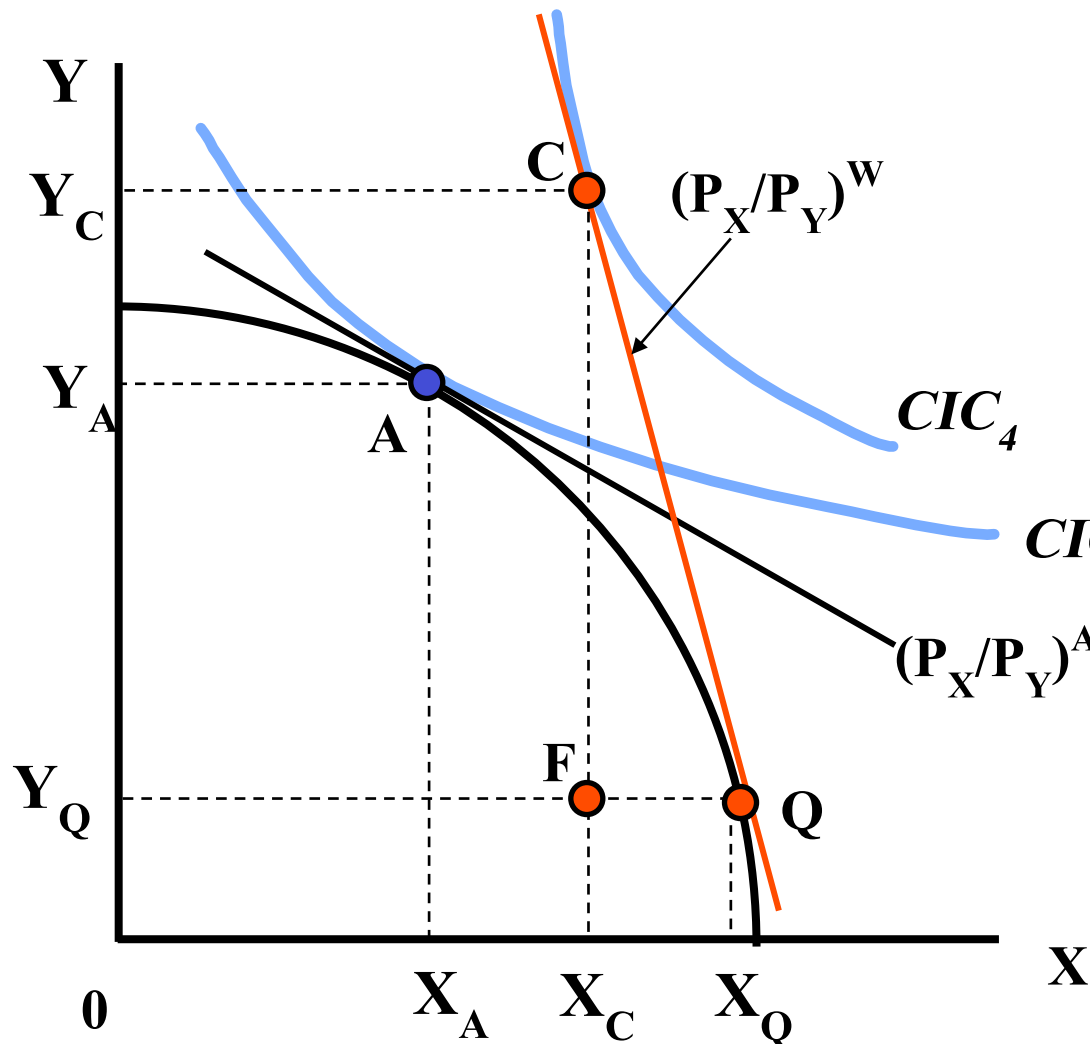
Assume: Income distribution does not change the total demand

Autarky equilibrium



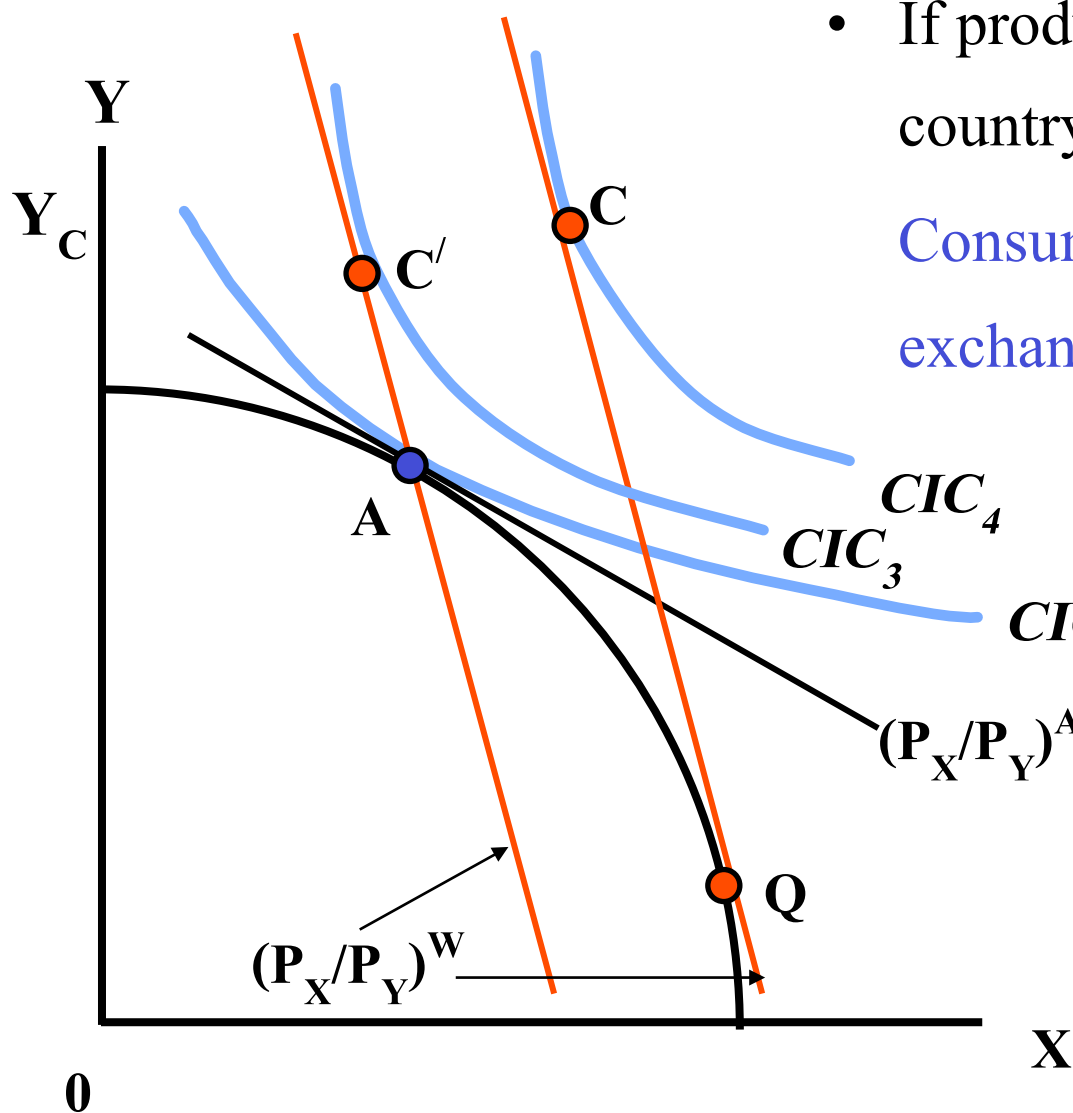
International equilibrium

- Suppose the world relative price of X is higher.



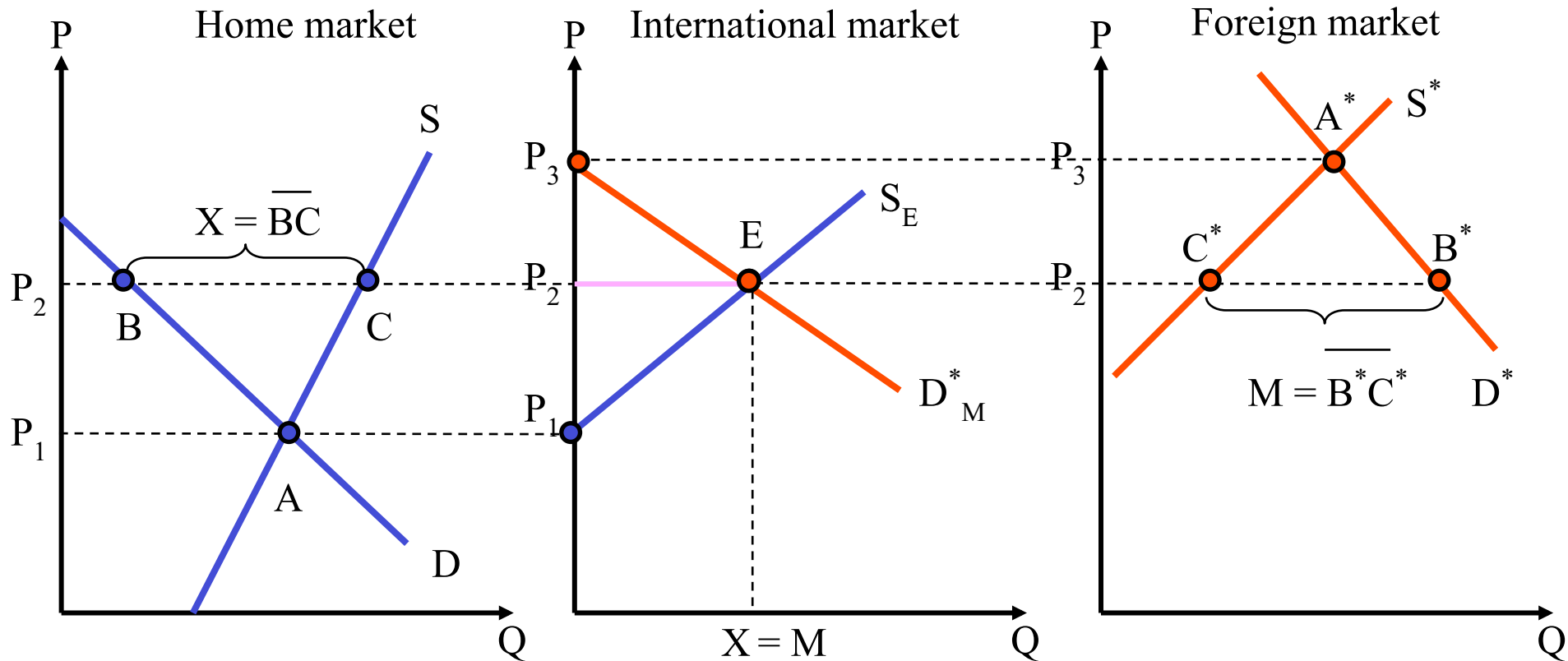
- Production moves to point Q.
- Consumption moves to point C.
- Exports X = $X_Q - X_C$.
- Imports Y = $Y_C - Y_Q$.

Gains from trade



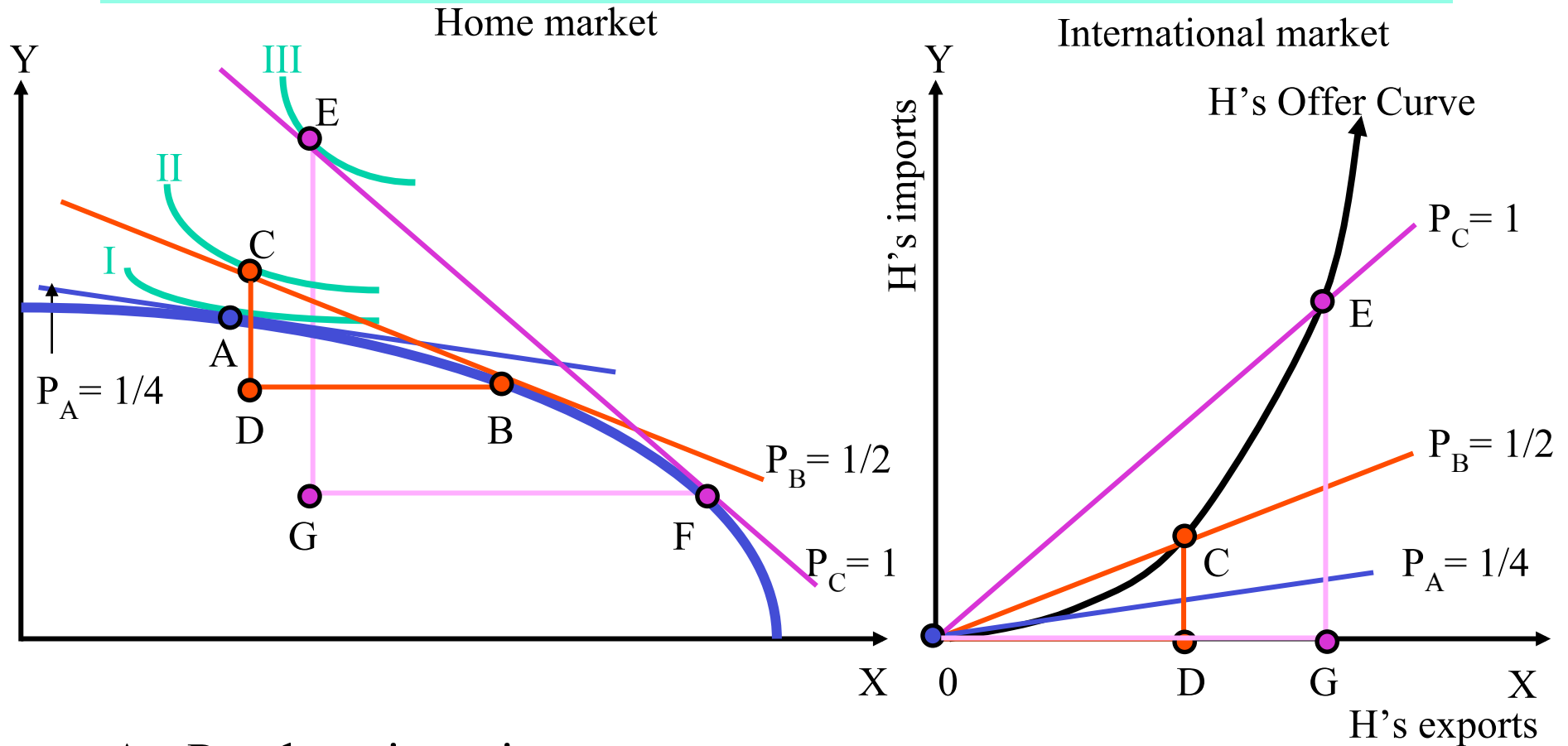
- If production remains at A but the country trade at world price. --> Consumption gain or gains from exchange: movement from A to C'.
- If production can change to Q --> Production gain or gains from specialization: movement from C' to C.
- Total gains from trade: movement from A to C.

Equilibrium Price: Partial equilibrium analysis



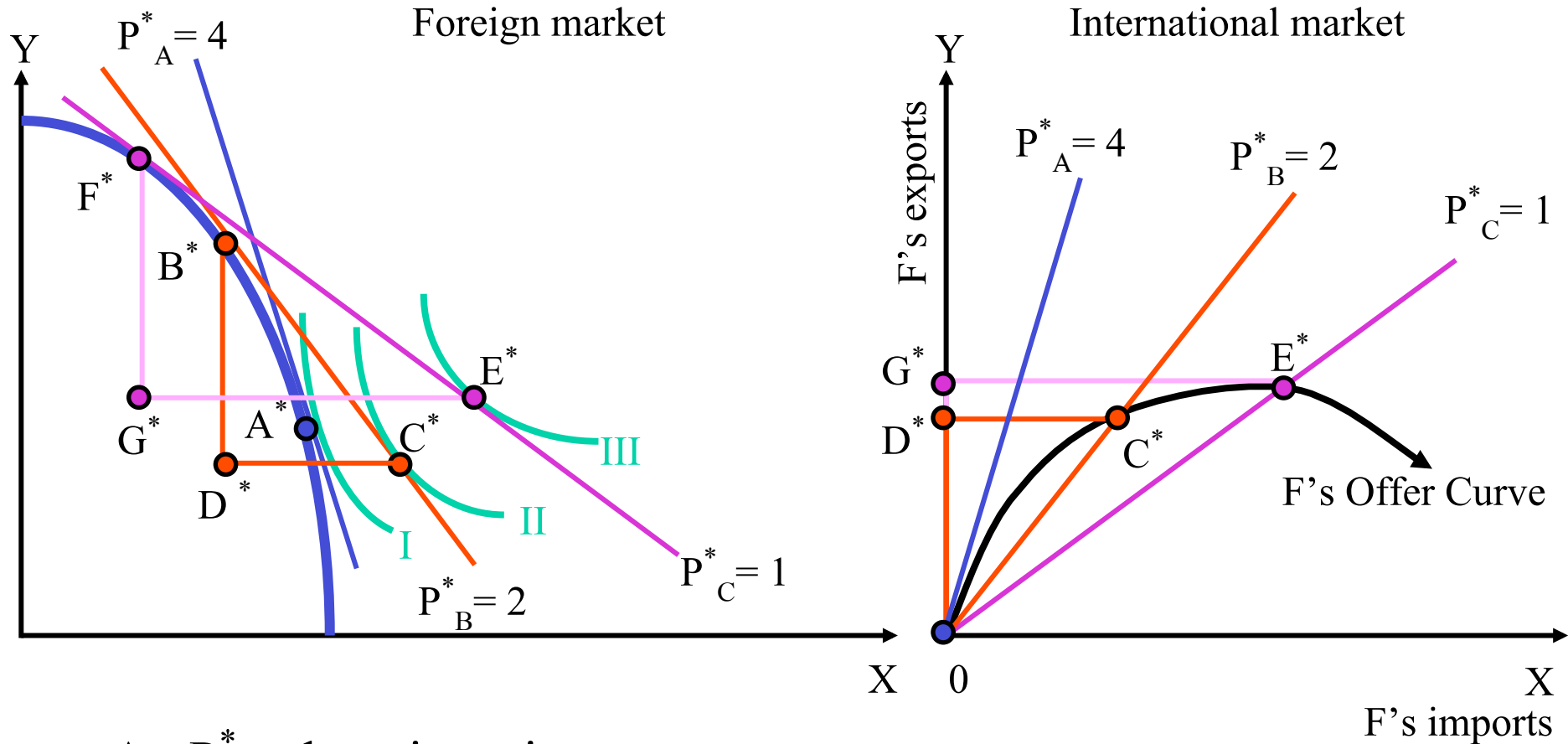
- Home's export supply curve, S_E , comes from its excess supply.
- Foreign's import demand curve, D_M^* , comes from its excess demand.
- International equilibrium price occurs where $S_E = D_M^*$ at point E.

Equilibrium relative price: Offer curves



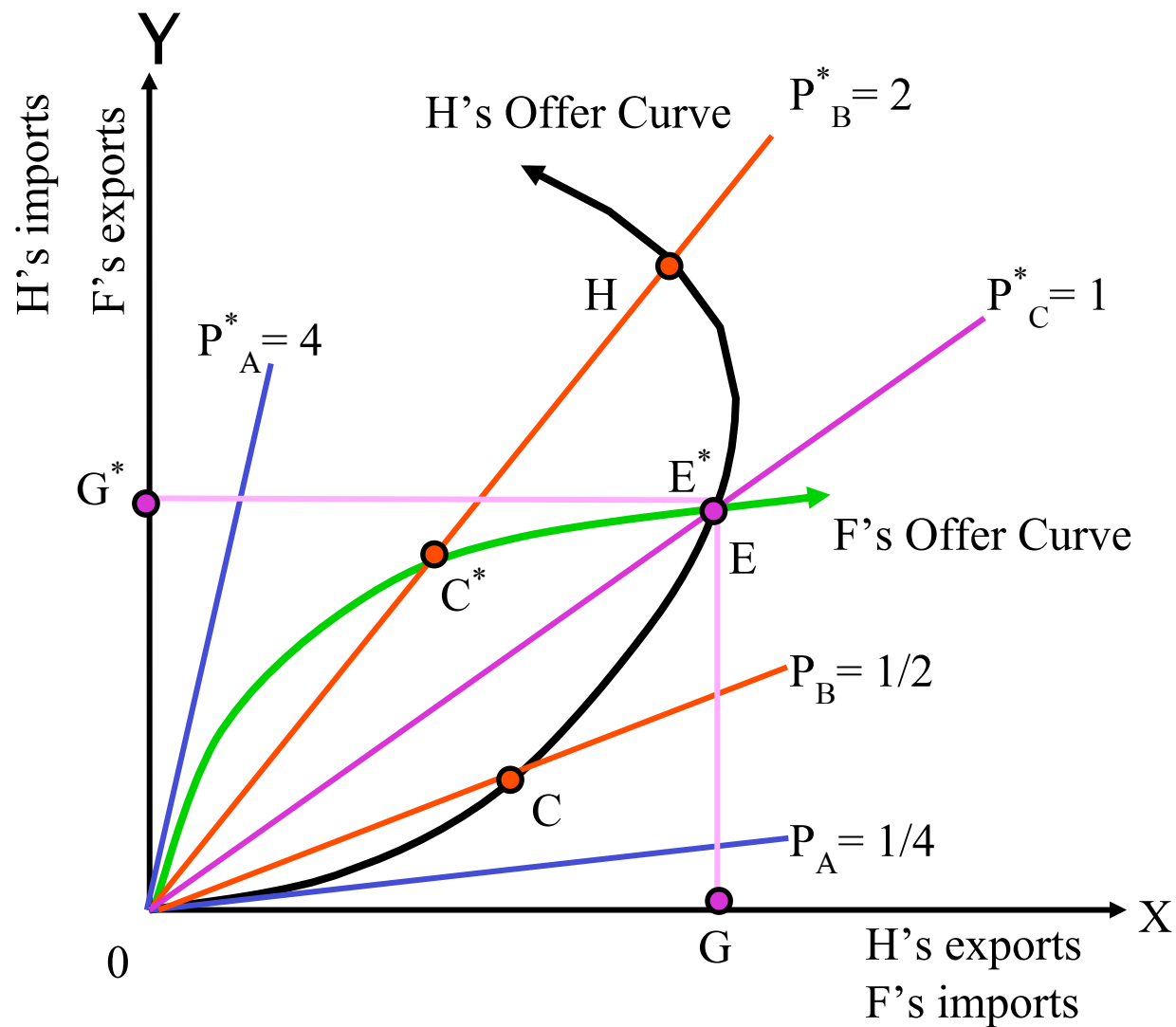
- At P_A , there is no imports or exports.
- At P_B , H imports $Y = \overline{CD}$ exports $X = \overline{DB}$.
- At P_C , H imports $Y = \overline{EG}$ exports $X = \overline{FG}$.

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.