

International Trade: Theory and Policy

Lecture 3

September, 2016

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Lecture is prepared by Prof. Sergey Kadochnikov, Natalia Davidson

Topic 2. General equilibrium in the open (trading) economy

- 2.1. General equilibrium conditions in the open economy (the case of small economy).
- 2.2. The concept of the excess demand function.
- 2.3. International general equilibrium conditions.

(2.1.) Formulation of the general equilibrium model for small open economy

- **What is small economy?**

- Demand and supply in small economy (for a specific good) do not affect the world price level on the world market of the good under consideration.

(1) Exogenous parameters of the model:

- Production technology (at least 2 goods) – production functions:
 - $X = f_x(K_x, L_x)$;
 - $Y = f_y(K_y, L_y)$.
- Resource endowment in the economy (at least 2 resources) – capital (K) and labor (L):
 - $K = K_x + K_y$;
 - $L = L_x + L_y$.
- Preferences of representative household – utility function:
 - $U = U(X, Y)$.
- World price ratio for final goods: P_x^*/P_y^* .
- Market structure on the final goods markets – perfect competition.
- Market structure on the resource markets – perfect competition.

(2.1.) Formulation of the general equilibrium model for small open economy (continued)

(2) Endogenous parameters of the model:

- Equilibrium production of final goods: X_p^* , Y_p^* ;
- Equilibrium consumption of final goods: X_c^* , Y_c^* :
 - If $(X_c^* - X_p^*) > 0$ or $(Y_c^* - Y_p^*) > 0$ – the good is imported;
 - If $(X_c^* - X_p^*) < 0$ or $(Y_c^* - Y_p^*) < 0$ – the good is exported.

(3) Equilibrium conditions:

- Producer optimization: $MRT^* = P_x^*/P_y^*$;
- Consumer optimization: $MRS^* = P_x^*/P_y^*$;
- Trade balance:
 - $(P_x^*/P_y^*) (X_c^* - X_p^*) + (Y_c^* - Y_p^*) = 0$.

Which conditions are similar and which ones are different compared to closed economy?

(2.2.) The concept of the excess demand function

- **Definition (general):**

- The excess demand function: relates the world price ratio on the one hand and difference between demand and supply, on the other hand

- $E_x(P_x/P_y) = X_c(P_x/P_y) - X_p(P_x/P_y)$

- **Graphical derivation of the excess demand function for small open economy:**

- From production possibilities curve of the economy

(2.2.) The concept of the excess demand function

- Graph of the excess demand function for small open economy: derivation from production possibilities curve.

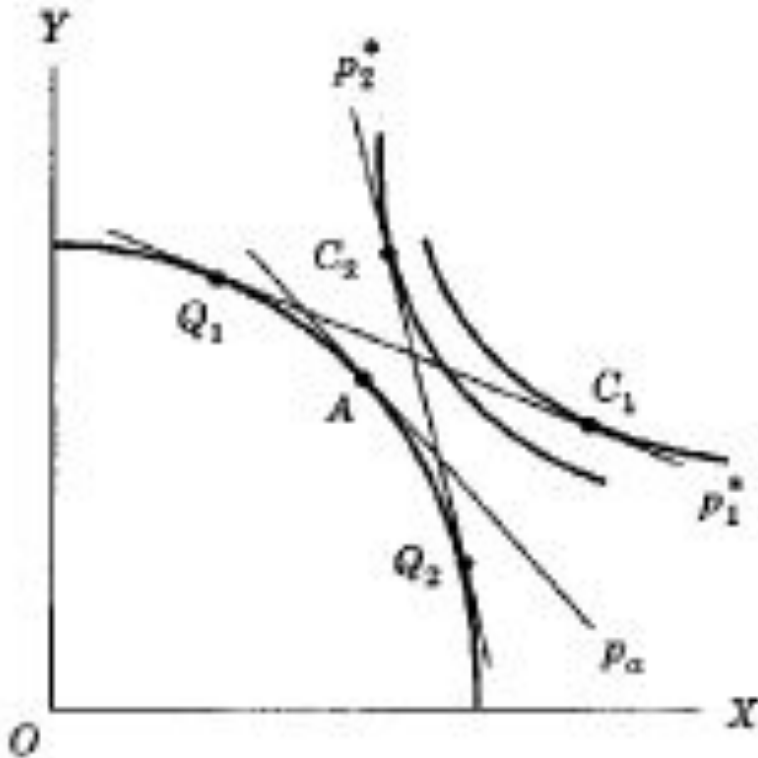


Figure 3.2. Different trade equilibria

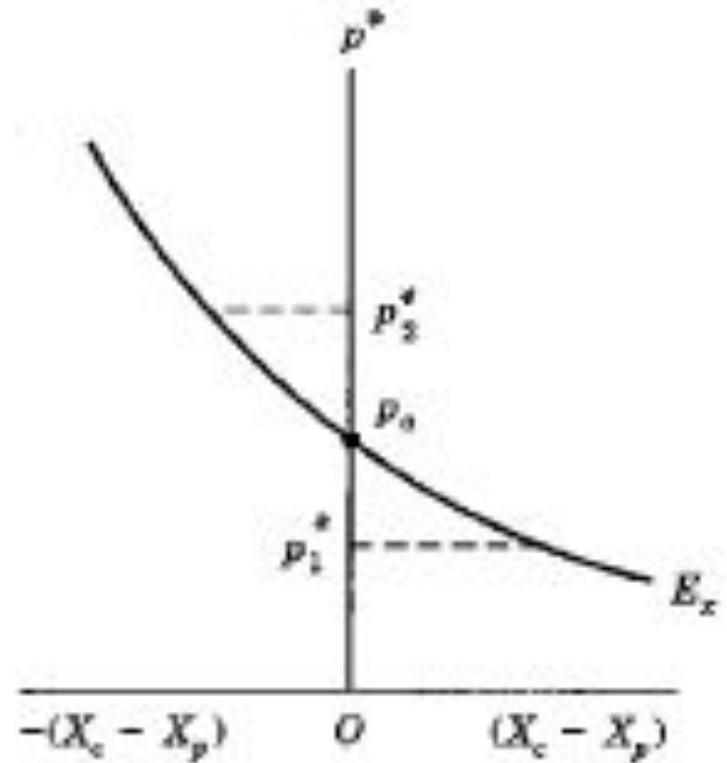


Figure 3.3. The excess demand for X

Source: Markusen et al. (1995), Ch. 4, P. 56

What are similarities and differences compared to the 'ordinary' demand function?

(2.2.) The concept of the excess demand function

- **Graph of the excess demand function for small open economy: characteristics**
 - Slope of the excess demand curve;
 - Intersection with vertical axis.

(2.3.) Conditions of international general equilibrium

- **Which economies form the world economy?**

- Large economies (at least 2 – h, f);
- Large economy: demand and supply of the large economy (for a specific good) affect the world price level on the market of the good under consideration.

(1) Exogenous parameters of the model (for each economy):

- Production technology (at least 2 goods) – production functions (identical in the economies):
 - $X = f_x (K_x, L_x)$;
 - $Y = f_y (K_y, L_y)$.
- Resource endowment in each economy (at least 2 resources) – capital (K) and labor (L):
 - $K_h = K_{hx} + K_{hy}$, $K_f = K_{fx} + K_{fy}$;
 - $L_h = L_{hx} + L_{hy}$, $L_f = L_{fx} + L_{fy}$.
- Preferences of representative household in each of the economies – utility functions:
 - $U_h = U_h (X_h, Y_h)$;
 - $U_f = U_f (X_f, Y_f)$.
- Market structure on the final goods markets – perfect competition.
- Market structure on the resource markets – perfect competition.

(2.3.) Conditions of international general equilibrium (continued)

(2) Endogenous parameters of the model:

- Equilibrium production of final goods: X_{ph}^* , Y_{ph}^* , X_{pf}^* , Y_{pf}^* ;
- Equilibrium consumption of final goods: X_{ch}^* , Y_{ch}^* , X_{cf}^* , Y_{cf}^* :
 - If $(X_c^* - X_p^*) > 0$ or $(Y_c^* - Y_p^*) > 0$ – the good is imported;
 - If $(X_c^* - X_p^*) < 0$ or $(Y_c^* - Y_p^*) < 0$ – the good is exported.
- World price ratio for final goods: P_x^*/P_y^* ;

(3) Equilibrium conditions:

- Equilibrium conditions for the economy h: $MRT_h^* = P_x^*/P_y^* = MRS_h^*$;
- Equilibrium conditions for the economy f: $MRT_f^* = P_x^*/P_y^* = MRS_f^*$;
- Trade balance for both economies:
 - $(P_x^*/P_y^*) (X_{ch}^* - X_{ph}^*) + (Y_{ch}^* - Y_{ph}^*) = 0$;
 - $(P_x^*/P_y^*) (X_{cf}^* - X_{pf}^*) + (Y_{cf}^* - Y_{pf}^*) = 0$.
- Market clearing conditions on the world market of two goods:
 - $X_{ch}^* + X_{cf}^* = X_{ph}^* + X_{pf}^*$;
 - $Y_{ch}^* + Y_{cf}^* = Y_{ph}^* + Y_{pf}^*$.

(2.3.) Conditions of international general equilibrium (continued)

- (4) Graphical illustration of general equilibrium in the world economy:
□ With the excess demand curves for two countries;

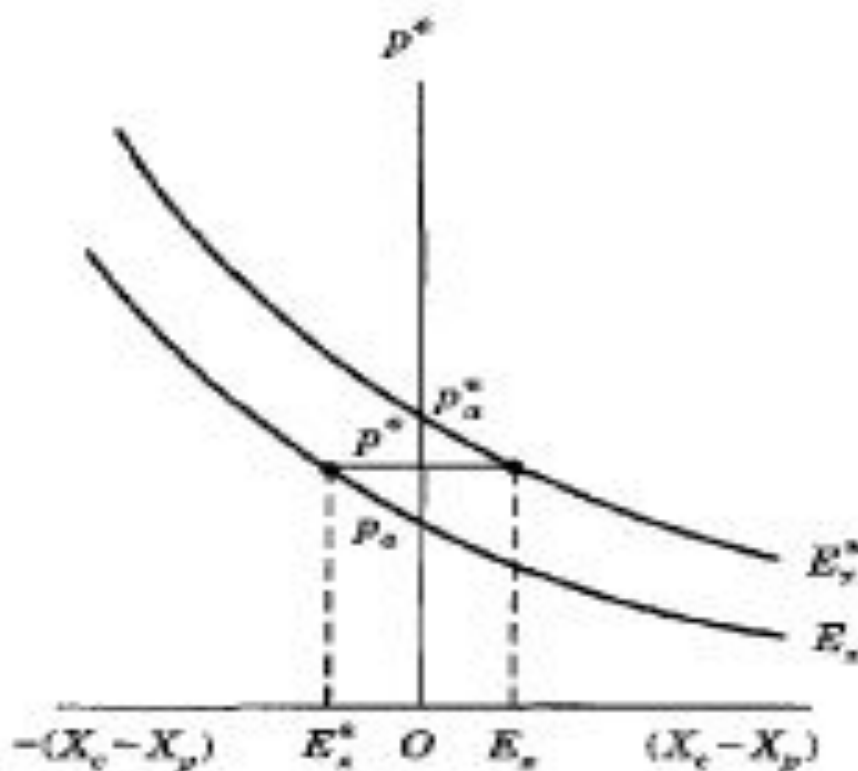


Figure 3.4. International general equilibrium
Source: Markusen et al. (1995), Ch. 4, P. 58

(2.3.) Conditions of international general equilibrium (continued)

- (4) Graphical illustration of general equilibrium in the world economy:**
 - With production possibility curves for two countries.

During the lecture.

Homework

(1) Exercise session 2

(2) Think about topics for reports during exercise sessions and work on a paper review (due 1 November 2016)

Office hours: Friday 13:50 – 14:30, room 216.

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Topic 3. The gains from free international trade under perfect competition on the markets

- 3.1. Total gains from free international trade and the gains-from-trade theorem.
- 3.2. The gains from specialization and the gains from exchange.