Lecture V: Targeting, and Rural Communities

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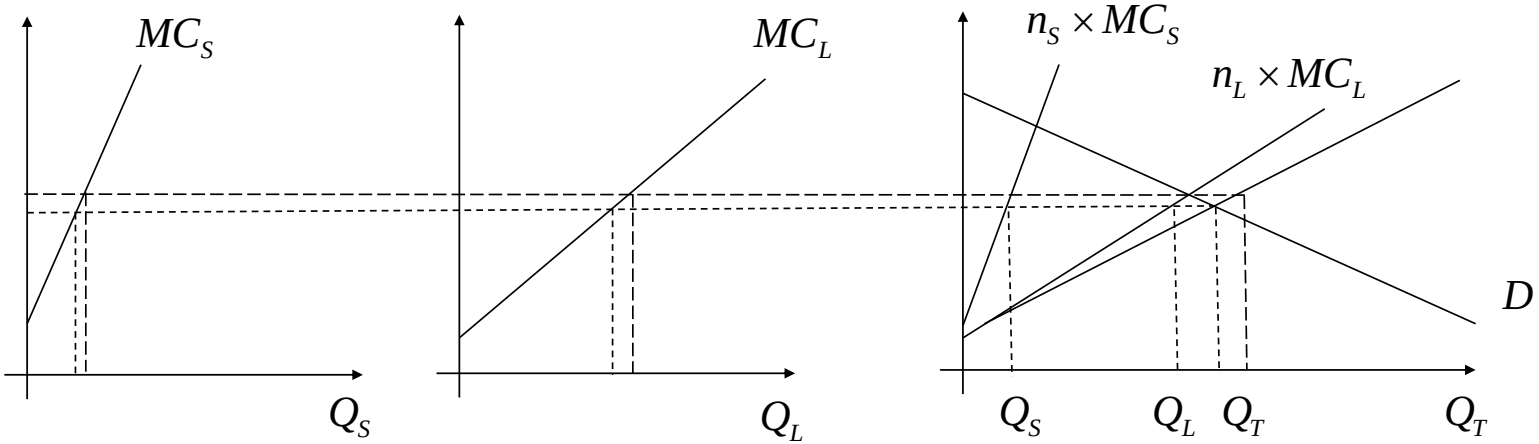
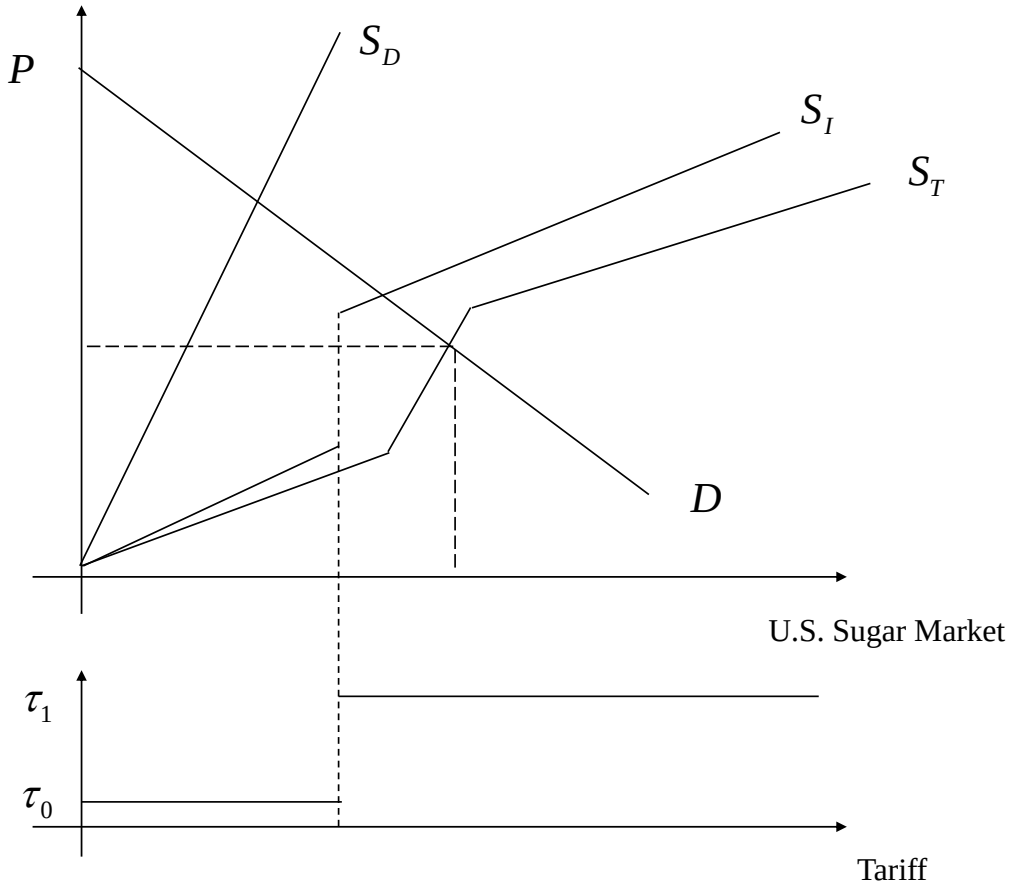
1. Targeting Farm Programs
   - Small and Large Producers
   - Sugar Program – Tariff Rate Quota System
2. Farm Programs and the Rural Economy
   - Macroeconomic Multiplier Models
   - Impact Multiplier Model

Small and Larger Producers



Small Producers | Large Producers | Market

Tariff Rate Quota System



Macroeconomic Multiplier Models

- Most students of economics have seen a simple multiplier (Keynesian) model of the economy

$$\begin{aligned} Y &= bY + G + I \\ \left(\frac{M}{P}\right) &= L\left(Y, r\right) \end{aligned} \tag{1}$$

- Ignoring for the moment the LM curve (Money Market Equilibrium), we can "solve" for the goods market equilibrium (IS)

$$\begin{aligned} \left(1 - b\right) Y &= G + I \\ Y &= \frac{G + I}{1 - b} \end{aligned} \tag{2}$$

Economic Tableau

- Economic theory seeks to explain the material aspects and operations of our society in terms of the intersection of supply and demand or wages and prices.
- An alternative way is to envison the economy as a set of transactions.
  - The horizontal rows are how the output for each sector is distributed among the others.
  - The columns show how the sector obtains its inputs from the other sectors.

Table: Quantity Tableau

	Sector 1: Agriculture	Sector 2: Manufacture	Sector 2: Household	Total Output	
Sector 1: Agriculture	25	20	55	100	Bu. of Wheat
Sector 2: Manufacture	14	6	30	50	Yards of cloth
Sector 3: Household	80	180	40	300	Man Years of Labor

- Although in principle the intersection flows as represented in an input-output table can be thought of as being measured physical units, in practice most input-output tables are constructed in value terms.
  - \$ 2/bu. of wheat
  - \$ 5/yard of cloth
  - \$ 1/man hour of labor

Table: Value Tableau

	Sector 1: Agriculture	Sector 2: Manufacture	Sector 2: Household	Total Output
Sector 1: Agriculture	50	40	110	200
Sector 2: Manufacture	70	30	150	150
Sector 3: Household	80	180	40	300
Total Input	220	250	300	

- Let the national economy be divided into $n+1$ sectors with n industries that produce goods and sector $n+1$ being the final demand.
- For purposes of mathematical manipulation, the physical output of sector i is usually represented by x_i while x_{ij} stands for the amount of the product of sector i absorbed by sector j.
- The quantity of the product of sector i delivered to the final demand sector $x_{i,n+1}$ is usually identified as y_i.
- The quantity of the output of sector i absorbed by sector j per unit of its total output j is depicted by the symbol a_{ij} and is called the input coefficient of the product of sector i into sector j.

$$a_{ij} = \frac{x_{ij}}{x_i} \tag{3}$$

Table: Value Tableau

		Sector 1: Agriculture	Sector 2: Manufacture	Sector 2: Household
Sector 1:	Agriculture	0.25	0.40	0.133
Sector 2:	Manufacture	0.14	0.12	0.100
Sector 3:	Household	0.80	0.60	0.133

$$\begin{aligned} x_1 &= x_{11} + x_{12} + x_{13} + y_1 \\ x_2 &= x_{21} + x_{22} + x_{23} + y_2 \\ x_3 &= x_{31} + x_{32} + x_{33} + y_3 \end{aligned} \tag{4}$$

$$\begin{aligned} x_1 &= a_{11}x_1 + a_{12}x_2 + a_{13}x_3 + y_1 \\ x_2 &= a_{21}x_1 + a_{22}x_2 + a_{23}x_3 + y_2 \\ x_3 &= a_{31}x_1 + a_{32}x_2 + a_{33}x_3 + y_3 \end{aligned} \tag{5}$$

$$\begin{aligned}(1-a_{11})\,x_1 - a_{12}x_2 - a_{13}x_3 &= y_1\\ a_{21}x_1 + (1-a_{22})\,x_2 - a_{23}x_3 &= y_2\\ a_{31}x_1 - a_{32}x_2 + (1-a_{33})\,x_3 &= y_3\end{aligned} \tag{6}$$

$$x = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix}$$

$$\left[I - \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \right] \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix} \tag{7}$$

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \left[I - \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \right]^{-1} \begin{bmatrix} y_1 \\ y_2 \\ y_3 \end{bmatrix}$$

Table: Impact of Trade

	Sector 1: Agriculture	Sector 2: Manufacture	Sector 2: Household	Export (+)	Final Demand	Tota Outpu
Sector 1: Agriculture	19.04	22.12	55	-20	35	76.1
Sector 2: Manufacture	10.66	6.64	30	+8	38	55.3
Sector 3: Households	60.93	199.07	40		40	300.