LECTURE 12
SUPPLY AND DEMAND MODEL OF INTERNATIONAL TRADE AND TRADE POLICY
February 28, 2017

I. OVERVIEW

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IV. WELFARE AND EMPLOYMENT EFFECTS OF TRADE
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LECTURE 12
Supply and Demand Model of International Trade and Trade Policy

February 28, 2017
Announcements

• We handed out Problem Set 3:
  • It is due next Tuesday (March 7).
  • Problem Set work session, Friday (March 3rd), 4–6 p.m. in 648 Evans

• Journal article reading for next time:
  • David Card, “The Impact of the Mariel Boatlift on the Miami Labor Market.”
I. Overview
II. REVIEW OF THE GAINS FROM SPECIALIZATION
Example

• Suppose the U.S. makes two goods (wheat and washing machines).

• The PPC for the U.S. is curved (there is rising opportunity cost).
• Assume the world price of wheat is $400 and the world price of washing machines is $300 (in the same currency), so the terms of trade (also called the world relative price) is 1½ washing machines per ton of wheat.
Optimal Specialization when the PPC is Curved

Washing Machines (WM)

(Slope = (minus) WM per 1 W; in our example it is \(-1\frac{1}{3}\))

CPC

U.S. PPC

Point of Tangency
Consumption Possibilities Curve with Trade

- Graphically, it is a line with slope (minus) the world relative price of the good on the horizontal axis that is tangent to the PPC.

- Intuitively, it shows the combinations of the two goods that the country can consume if it makes the bundle at the point of tangency and then trades at world prices.

- If the terms of trade change, the optimal production bundle will change (and the slope of the CPC will change).
III. Supply and Demand Model of International Trade
Supply and Demand Diagram for an Export Good

- $P_{\text{World}}$: World price with trade
- $P_{1}^{\text{US}}$: U.S. price without trade
- $Q_{D}^{\text{US}}$, $Q_{1}^{\text{US}}$, $Q_{S}^{\text{US}}$: Exports

- $S^{\text{US}}$, $D^{\text{US}}$: Supply and demand curves for the U.S.
Some Notes on the Interpretation of the Supply and Demand Diagram with Trade

• The U.S. supply curve is upward sloping to capture the notion of rising opportunity cost (the curved PPC).

• The world price is the world \textit{relative} price:
  • The price in a supply and demand diagram is always the price relative to other prices in the economy.

• We assume that the world demand or world supply at that world relative price is perfectly elastic.
Supply and Demand Diagram for an Import Good

- $P^\text{World}$: World Price with Trade
- $P_1^\text{US}$: U.S. Price without Trade
- $S^\text{US}$: U.S. Supply
- $D^\text{US}$: U.S. Demand
- $Q^\text{US}_S$: Domestic Supply
- $Q_1^\text{US}$: Domestic Demand
- $Q^\text{US}_D$: Imports

The diagram illustrates the effects of trade on the U.S. market for an import good.
IV. Welfare and Employment Effects of Trade
Welfare Analysis of Trade (Export Good)

Without Trade ($Q^{US}_{1}$)

- Consumer Surplus: $a + b + c$
- Producer Surplus: $e + f$
- Total Surplus: $a + b + c + e + f$
- Gains from Trade: $d$

With Trade ($Q^{US}_{D}, Q^{US}_{S}$)

- Consumer Surplus: $a$
- Producer Surplus: $b + c + d + e + f$
- Total Surplus: $a + b + c + d + e + f$
- Gains from Trade: $d$
Welfare Analysis of Trade (Import Good)

Without Trade ($Q_{1US}$)  
- Consumer Surplus: $a$  
- Producer Surplus: $b+e$  
- Total Surplus: $a+b+e$  
- Gains from Trade: $a+b+e$

With Trade ($Q_{DUS}, Q_{SUS}$)  
- Consumer Surplus: $a+b+c+d$  
- Producer Surplus: $e$  
- Total Surplus: $a+b+c+d+e$  
- Gains from Trade: $c+d$
Price Index for All Goods and Major Appliances

Source: FRED, Federal Reserve Bank of St. Louis.
The decrease in US production after trade implies less employment in this industry.
Supply and Demand Diagram for an Export Good

The increase in US production after trade implies more employment in this industry.
Employment Effects of Trade

- When a country goes from no trade to free trade, it will produce less of the good it imports and more of the good it exports.

- Employment will tend to fall in the import industry and rise in the export industry.

- Trade tends to rearrange jobs, rather than raise or lower employment overall.

- But, the rearrangement can be very painful for workers who lose their jobs (and who may not have the skills needed to move to the industries where jobs are available).
V. TRADE POLICY
Some Definitions

• **Free trade**: A country puts no barriers to international trade.

• **Protection**: A country puts limits on trade.

• **Trade policy**: A country’s policies toward trade.
Trade Policy is Not the Only Determinant of Trade

• Shipping costs matter.
• Improved logistics can make trade easier.
• Better communication makes trade in services possible.
The Advent of the Container Ship
Methods of Protection

• **Tariff**: A tax on imports.

• **Quota**: A limit on the number of imports.

• **Subsidies for domestic production**.
Average U.S. Tariff Rates on Dutiable Imports
Effects of a Tariff

Imports before Tariff

Imports after Tariff
Welfare Analysis of a Tariff

Before Tariff \((Q_{S1}^{US}, Q_{D1}^{US})\)

- Consumer Surplus: \(a+b+c+d+e+f\)
- Producer Surplus: \(g\)
- Tariff Revenue: \(e\)
- Total Surplus: \(a+b+c+d+e+f+g\)
- Deadweight Loss: \(d+f\)

After Tariff \((Q_{S2}^{US}, Q_{D2}^{US})\)

- Consumer Surplus: \(a+b\)
- Producer Surplus: \(c+g\)
- Tariff Revenue: \(e\)
- Total Surplus: \(a+b+c+e+g\)
- Deadweight Loss: \(d+f\)
VI. POSSIBLE ARGUMENTS FOR PROTECTION
Possible Arguments for Protection

• National security or diversification.
• Jobs for particular kinds of workers.
• Positive externalities.
• Others?
Positive Externality of Production and a Tariff

Change in the total social surplus due to the tariff: \( b - (c+d) \)
Some Statistics on the Midterm

• Median: 73.0

• 75\textsuperscript{th} percentile: 80

• 25\textsuperscript{th} percentile: 65

• Median corresponds \textit{roughly} to a B.
Some Notes on Grading

• We reward improvement.

• Regrade requests must be submitted in writing to your GSI by March 7th.