

Economics 452 International Trade Theory and Policy Fall 2009WORLD TRADE

1. With which trading partner does the United States have the largest trading volume?
 - a. China
 - b. Mexico
 - c. Canada
 - d. Germany
 - e. Japan

2. _____ as the *second* largest trading partner of the United States?
 - a. Mexico recently replaced Canada
 - b. Canada recently replaced Mexico
 - c. Mexico recently replaced China
 - d. China recently replaced Canada
 - e. China recently replaced Mexico

3. What is the largest destination for Texas exports?
 - a. China
 - b. Mexico
 - c. Canada
 - d. Germany
 - e. Japan

4. Which state exports the most (biggest dollar amount)?
 - a. Alaska
 - b. Texas
 - c. California
 - d. Florida
 - e. New York

5. For EU countries, a graph of percent of US trade with the EU against share of EU gross domestic product (GDP) looks like a
 - a. Horizontal line at 100%
 - b. Vertical line at 100%
 - c. Line with (upward) slope of one
 - d. Line with (downward) slope of negative one
 - e. No clear pattern - could even be U-shaped

6. What is *NOT* a reason why US trade with Canada can be similar in magnitude to US trade with the EU when Canada is less than 10% of EU GDP in size?
 - a. Canadian US Free Trade Agreement (CUSFTA)
 - b. Size does not matter
 - c. Greater cultural affinity with Canada than with EU
 - d. Shorter distance to Canada than to EU
 - e. EU concerns over genetically modified crops

7. What measure of the importance of trade do we use when comparing the US and UK now to earlier periods?
 - a. Imports
 - b. Exports
 - c. Trade volume, which is imports plus exports
 - d. Trade volume as a percent of GDP
 - e. GDP

8. In 2001, about 65% of exports from developing countries were in
 - a. Agriculture
 - b. Services
 - c. Mining
 - d. Manufactures
 - e. Non-traded goods

RICARDIAN MODEL

- 9-12. Machinery and chemicals are produced with labor. Suppose the free trade relative price of chemicals to machinery equals the autarky relative price of chemicals to machinery in China, which is higher than the autarky price of chemicals to machinery in Canada.
9. The opportunity cost of machinery in terms of chemicals is _____ in Canada compared to China.
- Higher
 - Lower
 - The same
 - Higher or the same
 - Lower or the same
10. China has comparative advantage in
- Only chemicals
 - Only machinery
 - Both chemicals and machinery
 - Neither chemicals nor machinery
 - Cannot tell from the information provided
11. Under free trade, China exports
- Only chemicals
 - Only machinery
 - Both chemicals and machinery
 - Neither chemicals nor machinery
 - Cannot tell from the information provided
12. Does China strictly gain from trade in this situation?
- Definitely yes
 - Definitely no
 - Possibly, but only if produces just chemicals
 - Possibly, but only if produces just machinery
 - Possibly, but only if produces both goods

- 13-16 China and Mexico engage in free trade in grapes and pears, which are produced with labor. Suppose under free trade that Mexico produces only grapes.
13. How does the wage paid in the pear sector compare to the wage paid in the grape sector in China under free trade? The wage is
- Higher in the pear sector than in the grape sector
 - Lower in the pear sector than in the grape sector
 - The same in the pear sector as in the grape sector
 - The same or higher in the pear sector than in the grape sector
 - The same or lower in the pear sector than in the grape sector
14. What does China produce under free trade?
- Only pears
 - Only grapes
 - Definitely pears and maybe grapes (pears or pears and grapes)
 - Definitely grapes and maybe pears (grapes or pears and grapes)
 - Definitely both pears and grapes
15. Does China strictly gain from trade?
- Definitely yes
 - Definitely no
 - Possibly, but only if produces just grapes
 - Possibly, but only if produces just pears
 - Possibly, but only if produces both goods
16. Under free trade, an increase in the relative price of pears to grapes would
- Definitely make Mexico better off
 - Definitely make Mexico worse off
 - Not impact Mexico one way or the other
 - Possibly make Mexico better off but only if trade volume is large enough
 - Possibly make Mexico better off but only if relative demand for pears to grapes is high enough

PROBLEMS (Ricardian Model)

In the United States (US), producing one pound of cheese requires one unit of labor, while producing one gallon of wine requires two units of labor. In the rest of the world (ROW), producing one pound of cheese requires two units of labor, while producing one gallon of wine requires two units of labor. The United States has 12 units of labor and the ROW has 16 units of labor. World relative demand for cheese to wine is

$$RD \equiv \frac{D_C}{D_W} = \frac{P_W}{P_C}.$$

1. Construct the US production possibilities frontier (all three forms).

Determine the US maximum production of cheese and of wine.

What is the US opportunity cost of cheese in terms of wine?

Where does it appear in the equation describing production possibilities?

Draw graph of US production possibilities frontier here:

2. Construct the ROW production possibilities frontier (all three forms).

Determine the ROW maximum production of cheese and of wine.

What is the ROW opportunity cost of cheese in terms of wine?

Compare the slopes of the two production possibilities frontiers – which is flatter and why?

Draw graph of the ROW production possibilities frontier here:

3. What is the world relative supply of cheese to wine if each country produces only its comparative advantage good?

Construct world relative supply and world relative demand.

Find the relative price of cheese in terms of wine under free trade.

Draw graph of world relative supply and world relative demand here:

4. Determine the optimal production bundle for each country under free trade.

Determine the pattern of trade - what does each country import and export?

Determine whether each country gains from trade and explain the source of any gains from trade.

5. Construct the US trade possibilities frontier (all three forms).

Determine the US maximum consumption of cheese and of wine under free trade.

Where does the free trade relative price of cheese in terms of wine appear in the equation describing trade possibilities?

Draw graph of US trade possibilities frontier on the PPF graph.

6. Construct the ROW trade possibilities frontier (all three forms).

Determine the ROW maximum consumption of cheese and of wine under free trade.

Compare the slopes of the two trade possibilities frontiers and explain.

Draw graph of ROW trade possibilities frontier on the PPF graph.

On my honor as an Aggie, I have neither given nor received unauthorized aid on this exam.

Signature _____

FIRST MIDTERM EXAM SOLUTIONS

Economics 452 International Trade Theory and Policy Fall 2009

MULTIPLE CHOICE

- 1c The United States has the largest trading volume with Canada.
- 2e China recently replaced Mexico as the *second* largest trading partner of the United States.
- 3b Mexico is the largest destination for Texas exports.
- 4b Texas exports the most (biggest dollar amount) of any US state.

- 5c For EU countries, a graph of percent of US trade with the EU against share of EU gross domestic product (GDP) looks like a line with (upward) slope of one.
- 6b Size does not matter is *NOT* a reason why US trade with Canada can be similar in magnitude to US trade with the EU when Canada is less than 10% of EU GDP in size (size measured by GDP does matter).
- 7d Use trade volume as a percentage of GDP to measure importance of trade when comparing the US and UK now to earlier periods.
- 8d About 65% of exports from developing countries are in manufactures.

- 9a The opportunity cost of machinery in terms of chemicals is higher in Canada compared to China.
- 10b China has comparative advantage in only machinery.
- 11b Under free trade, China exports only machinery.
- 12b Definitely no, China does not gain from trade – indifferent because the free trade relative price does not differ from autarky.

- 13d In China under free trade, the wage is the same or higher in the pear sector than in the grape sector.
- 14c Under free trade, China produces definitely pears and maybe grapes (pears or pears and grapes).
- 15d Does China strictly gain from trade? Possibly, but only if produces just pears.
- 16b Under free trade, an increase in the relative price of pears to grapes would definitely make Mexico worse off.

PROBLEMS (Ricardian Model)

In the United States (US), producing one pound of cheese requires one unit of labor, while producing one gallon of wine requires two units of labor. In the rest of the world (ROW), producing one pound of cheese requires two units of labor, while producing one gallon of wine requires two units of labor. The United States has 12 units of labor and the ROW has 16 units of labor. World relative demand for cheese to wine is

$$RD \equiv \frac{D_C}{D_W} = \frac{P_W}{P_C}.$$

1. Construct the production possibilities frontier for the United States

$$a_{LC}Q_C + a_{LW}Q_W = L, \quad Q_C + 2Q_W = 12, \quad Q_W = 6 - \frac{1}{2}Q_C$$

Determine the US maximum production of cheese and of wine.

$$\bar{Q}_C = 12, \quad \bar{Q}_W = 6$$

What is the US opportunity cost of cheese in terms of wine?

$$\frac{a_{LC}}{a_{LW}} = \frac{1}{2} = 0.5$$

Where does it appear in the equation describing production possibilities?

Absolute value of slope

GRAPH OF PRODUCTION POSSIBILITIES FRONTIER: horizontal axis labeled cheese, vertical axis labeled wine; cheese endpoint 12; wine endpoint 6; PPF label.

2. Construct the production possibilities frontier for the ROW.

$$a_{LC}^* Q_C^* + a_{LW}^* Q_W^* = L^*, \quad 2Q_C^* + 2Q_W^* = 16, \quad Q_W^* = 8 - Q_C^*$$

Determine the ROW maximum production of cheese and of wine.

$$\bar{Q}_C^* = 8, \quad \bar{Q}_W^* = 8$$

What is the ROW opportunity cost of cheese in terms of wine? Compare the slopes of the two production possibilities frontiers – which is flatter and why?

$$\frac{a_{LC}^*}{a_{LW}^*} = \frac{2}{2} = 1$$

US production possibilities frontier flatter due to lower opportunity cost of cheese in terms of wine.

$$\frac{1}{2} = \frac{a_{LC}}{a_{LW}} < \frac{a_{LC}^*}{a_{LW}^*} = 1$$

GRAPH OF PRODUCTION POSSIBILITIES FRONTIER*: horizontal axis labeled cheese, vertical axis labeled wine; cheese endpoint 8; wine endpoint 8; PPF* label

3. What is the world relative supply of cheese to wine if each country produces only its comparative advantage good?

$$RS = \frac{\bar{Q}_C}{\bar{Q}_W^*} = \frac{12}{8} = \frac{3}{2} = 1.5$$

Construct world relative supply and world relative demand.

P_C/P_W	$RD = P_W/P_C$	RS
1/2	2	0 .. 3/2
2/3	3/2	3/2
1	1	3/2 .. ∞

Find the relative price of cheese in terms of wine under free trade.

$$\frac{P_C}{P_W} = \frac{2}{3} = 0.67$$

GRAPH OF RELATIVE DEMAND AND RELATIVE SUPPLY:
 horizontal axis labeled relative quantity of cheese (to wine), vertical axis labeled relative price of cheese (to wine); first step at 1/2=0.5, second step at 1; jump at 3/2 and free trade relative price 2/3=0.67; other two points on RD (1/2,2) and (1,1); RD label, RS label

4. Determine the optimal production bundle for each country under free trade.

$$Q_C = \bar{Q}_C = 12, Q_W = 0$$

$$Q_C^* = 0, Q_W^* = \bar{Q}_W^* = 8$$

Determine the pattern of trade - what does each country import and export?

The United States exports cheese and imports wine; ROW exports wine and imports cheese.

Determine whether each country gains from trade and explain the source of any gains from trade.

Both countries gain from trade as the free trade relative price differs from both opportunity costs.

5. Construct the trade possibilities frontier for the US.

$$\frac{P_C}{P_W} D_C + D_W = \frac{P_C}{P_W} \bar{Q}_C, \quad \frac{2}{3} D_C + D_W = \frac{2}{3}(12) = 8, \quad D_W = 8 - \frac{2}{3} D_C$$

Determine the US maximum consumption of cheese and of wine under free trade.

$$\bar{D}_C = 12, \quad \bar{D}_W = 8$$

Where does the free trade relative price of cheese in terms of wine appear in the equation describing trade possibilities?

Absolute value of slope

GRAPH OF TRADE POSSIBILITIES FRONTIER: cheese endpoint 12; wine endpoint 8; TPF label; position of TPF outside PPF

6. Construct the trade possibilities frontier for the ROW.

$$\frac{P_C}{P_W} D_C^* + D_W^* = \bar{Q}_W^*, \quad \frac{2}{3} D_C^* + D_W^* = 8, \quad D_W^* = 8 - \frac{2}{3} D_C^*$$

Determine the ROW maximum consumption of cheese and of wine under free trade.

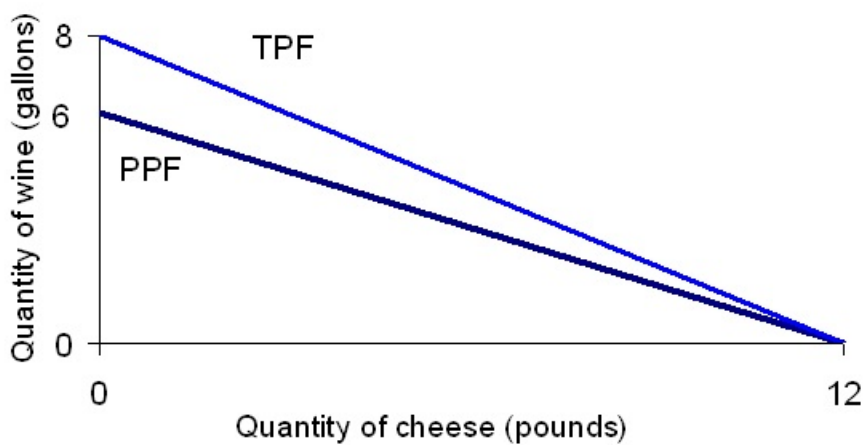
$$\bar{D}_C^* = 12, \quad \bar{D}_W^* = 8$$

Compare the slopes of the two trade possibilities frontiers and explain.

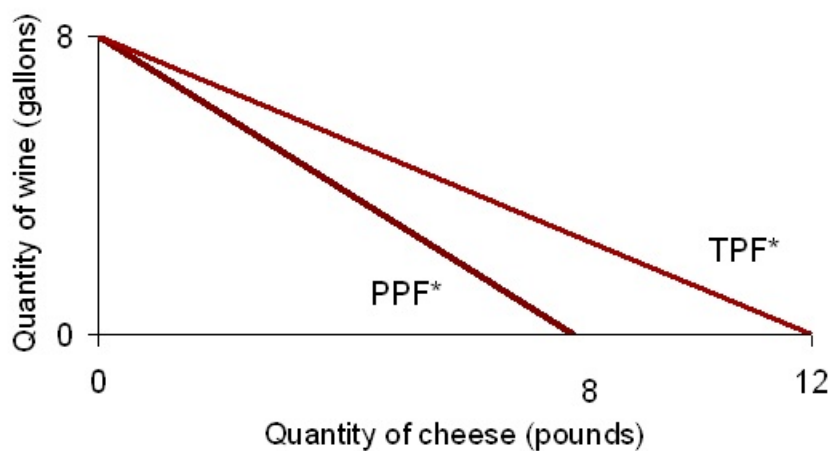
Same as the two countries face same relative price under free trade

GRAPH OF TRADE POSSIBILITIES FRONTIER*: cheese endpoint 12; wine endpoint 8; TPF* label; position of TPF* outside PPF*

1&5 US PPF and TPF



2&6 ROW PPF and TPF



3 World RS & RD

