Practice Problems: Trade Deficits

Econ520. Fall 2022. Prof. Lutz Hendricks. September 9, 2022

Also useful: Jones, Charles I. (2008). Macroeconomics (1st ed.). W. W. Norton, ch. 14, questions 1, 3-8.

1 Basics

1. Explain comparative advantage.
2. If a country has an absolute advantage in the production of all goods, how can other countries compete with it in world markets?
3. Why does trade with low wage countries not drive down U.S. wages?

1.1 Answers: Basics

1. See slides.
2. Absolute advantage means high productivity and low cost. If all goods are cheap in China, world markets do not clear. Either the Chinese currency appreciates or Chinese wages rise until other countries are competitive again.
3. The absolute advantage question in disguise. See above.

2 Gains from trade

1. Why do countries gain from international trade?
2. Does foreign productivity growth hurt us?
3. Do countries gain more from trading with similar or with dissimilar countries? Explain with reference to the two reasons why countries trade.
4. There are 2 countries and 2 goods that are produced from labor. One worker in country A produces 10 units of good 1 and 100 units of good 2 One worker in country B produces 50 units of good 1 and 200 units of good 2. Which country has a comparative advantage in good 1? Explain your answer and support it with an inequality formula.
5. In the example we studied in class, try to determine the effects of productivity growth in the South and the North. Convince yourself that both countries gain.

2.1 Answers: Gains from trade

1. The same as for trade between individuals: countries specialize in the production of goods they are good at making.
2. To the contrary. Imports get cheaper.
3. Gains from trade a larger for dissimilar countries. For intertemporal trade: countries that want to save / borrow at different times gain from trade. For comparative advantage:

it is easy to see that identical countries do not gain from trade. To say something stronger, construct examples.

4. Comparative advantage is determined by the ratio of labor productivities: country A's ratio is 10/100. Country B's ratio is 50/200, which is higher than A's. B has a comparative advantage in good 1.

3 Two Country Example

Consider the following 2 country model. There are 2 countries (North and South) and 2 goods (apples and computers). The following table summarizes population and productivities. Demand functions are such that each person in the North buys 5 computers, regardless of price. In the South, each person buys 1 computer, regardless of price.

	North	South
Population	100	100
Productivity: apples per worker	100	50
Productivity: computers per worker	10	2
Demand: computers per person	5	1

Questions:

1. Which country has a comparative advantage in apples? Explain.

2. Calculate wages, prices, and quantities produced and consumed in autarky (countries do not trade with each other).

Table 1: Autarky

	North	South
Output computers	500	100
Employment computers	50	50
Employment apples	50	50
Output apples	5,000	2,500
Wage	100	50
Price of computers	10	25

3. Calculate wages, prices, and quantities produced and consumed under free trade.

4. Which country benefits from free trade?

3.1 Answer: Two Country Example

1. North has comparative advantage in computers. Its relative productivity is 10/100 compared with 2/50 in the South.

2. Autarky: see table 1.

3. Free trade: see table 2.

4. Only the South gains from trade. This example (sort of) addresses the concern: what happens if we open up trade and demand for "our" good is very low. Doesn't it drive down the price of "our" good until we lose from trade? The answer is No. If the price falls too much, we just switch to producing the other good.

Table 2: Free trade

	North	South
Output computers	600	0
Employment computers	60	0
Employment apples	40	100
Output apples	4,000	5,000
Wage	100	50
Price of computers	10	10

4 Trade Balance

1. Explain how trade can help a country (or person) smooth consumption over time.
2. Under what conditions would we expect a country to run a trade surplus?
3. Can a country run a trade surplus and attract foreign investment at the same time?
4. How would you expect the following events to affect the U.S. trade balance:
   (a) a slowdown in U.S. growth
   (b) increasing regulation raises U.S. production costs
   (c) China artificially cuts wages
   (d) Foreign tariffs on U.S. exports
5. Is it possible for a country to run a trade deficit forever?

4.1 Answers: Trade Balance

1. See notes surrounding the example on trade across time.

2. Countries run trade surpluses either if investment is low (e.g. low expected productivity growth, high taxes on investment) or if saving is high (e.g. low expected income growth, demographic structure with lots of middle aged people).

3. No. A trade surplus means the country accumulates foreign assets, not the other way around. The country is a net saver.

4. Think about how each shock affects private saving, public saving, and investment. Then use the identity $NX = S - I$.

5. Yes. Just like a company can issue bonds forever.

5 The U.S. Situation

1. Why does the U.S. receive positive net income from abroad, even though its net asset position in negative by several trillion dollars?